This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

~~Sci 826.5~~

Per 2205

HARVARD COLLEGE

SCIENCE CENTER
LIBRARY

1/2

THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC.

FOR THE YEAR

1864.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY.

BUREAU OF ORDNANCE AND HYDROGRAPHY,
WASHINGTON.
1862.

~~130.4~~
~~Sci 320.5~~
Per 2208

HARVARD COLLEGE LIBRARY

1864. Feb. 16
Gift of
the Nautical Almanac Office

CAMBRIDGE:
ELECTROTYPED AND PRINTED BY WELCH, BIGELOW, & CO.

PREFACE.

THE preparation of the American Ephemeris and Nautical Almanac was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. An account of this preparation, its details, the values of the constants adopted, and the means employed in various parts of the work to secure additional accuracy, or greater convenience, will be found in the Preface and Appendix of the first volume, for the year 1855.

The contents of the volume for this year are the same, generally, as those of the volume for the previous year.

JOSEPH WINLOCK,
Prof. Math., U. S. Navy, Superintendent.

CAMBRIDGE, 1862.

CONTENTS.

Page
Chronological Eras and Cycles . . . vii
Symbols and Abbreviations . . . viii

Ephemeris for the Meridian of Greenwich.

Page of the Month.
Ephemeris of the Sun . . . I.
Ephemeris of the Moon . . . IV.
Lunar Distances . . . XIII.
Page
Ephemerides of the Planets, Venus — Saturn . . . 218
Sun's Coördinates . . . 242
Moon's Longitude . . . 245

Ephemeris for the Meridian of Washington.

Obliquity of the Ecliptic, &c. . . . 250
Fixed Stars . . . 251
Ephemeris of the Sun . . . 299
Moon Culminations . . . 305
Moon-Culminating Stars . . . 320
Moon's Semidiameter, Horizontal Parallax, and Meridian Transit . . . 328
Moon's Phases . . . 334
Moon's Equator . . . 335
Ephemerides of the Planets, Mercury — Neptune . . . 336
Horizontal Parallaxes and Semidiameters of the Planets . . . 378
Sun's Coördinates . . . 380
Heliocentric Coördinates of the Planets . . . 392
Eclipses . . . 400
Occultations . . . 407
Jupiter's Satellites . . . 438
Saturn's Ring, Discs of Venus and Mars . . . 472
Phenomena, Planetary Constellations . . . 473
Latitudes and Longitudes of Observatories . . . 475
Use of the Tables . . . 486

Appendix.

Construction of the Ephemerides . . . 1
Table for changing Longitude and Latitude to Right Ascension and Declination, and the Reverse 6
Moon's Libration . . . 8
Moon's Mean Motion . . . 9
Table of Logarithms of Small Arcs . . . 10
Table of Corrections for Second Differences in Moon's Motion . . . 28
Table for converting Sidereal into Mean Solar Time, and the Reverse . . . 29
Table giving Corrections of α Ursæ Minoris and δ Ursæ Minoris . . . 35

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1864, WHICH COMPRISES THE LATTER PART OF THE 88TH AND THE BEGINNING OF THE 89TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO

The year 6577 of the Julian Period;
" 7372 – 73 of the Byzantine era;
" 5624 – 25 of the Jewish era;
" 2617 since the foundation of Rome, according to Varro;
" 2611 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February, of the 3967th year of the Julian Period, corresponding according to the chronologists to the 747th, and according to the astronomers to the 746th year before the birth of Christ;
" 2640 of the Olympiads, or the fourth year of the 660th Olympiad, commencing in July, 1861, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period;
" 2176 of the Grecian era, or the era of the Seleucidæ;
" 1580 of the era of Diocletian.

The year 1281 of the Mohammedan era, or the era of the Hegira, begins on the 6th of June, 1864.

The first day of January of the year 1864 is the 2,401,872d day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letters	C B	Solar Cycle	25
Epact	22	Roman Indiction	7
Lunar Cycle or Golden Number	3	Julian Period	6577

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕ or ♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring signs.	1.	♈	Aries.	Autumn signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpio.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer signs.	4.	♋	Cancer.	Winter signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌ Conjunction, or having the same Longitude or Right Ascension.
□ Quadrature, or differing 90° in " " "
☍ Opposition, or differing 180° in " " "

ABBREVIATIONS.

☊	Ascending Node.	$'$	Minutes of Arc.
☋	Descending Node.	$''$	Seconds of Arc.
N.	North. S. South.	^{h}	Hours.
E.	East. W. West.	^{m}	Minutes of Time.
°	Degrees.	^{s}	Seconds of Time.

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Fri.	1	18 45 15.35	11.044	S. 23 2 50.6	11.94	16 18.41	71.10	3 37.89	1.187
Sat.	2	18 49 40.36	11.031	22 57 50.0	13.09	16 18.40	71.05	4 6.26	1.175
Sun.	3	18 54 5.04	11.017	22 52 21.9	14.23	16 18.39	71.00	4 34.31	1.161
Mon.	4	18 58 29.36	11.002	22 46 26.5	15.37	16 18.37	70.95	5 2.00	1.146
Tues.	5	19 2 53.30	10.985	22 40 3.9	16.50	16 18.35	70.90	5 29.31	1.129
Wed.	6	19 7 16.82	10.967	22 33 14.2	17.62	16 18.33	70.84	5 56.20	1.111
Thur.	7	19 11 39.89	10.948	22 25 57.9	18.73	16 18.30	70.77	6 22.64	1.092
Fri.	8	19 16 2.48	10.927	22 18 15.0	19.82	16 18.27	70.70	6 48.60	1.071
Sat.	9	19 20 24.55	10.905	22 10 5.7	20.91	16 18.23	70.63	7 14.05	1.049
Sun.	10	19 24 46.08	10.882	22 1 30.5	21.99	16 18.19	70.56	7 38.95	1.025
Mon.	11	19 29 7.03	10.858	21 52 29.5	23.06	16 18.15	70.48	8 3.27	1.001
Tues.	12	19 33 27.38	10.833	21 43 2.9	24.12	16 18.10	70.40	8 27.01	0.975
Wed.	13	19 37 47.10	10.806	21 33 11.0	25.16	16 18.05	70.32	8 50.11	0.948
Thur.	14	19 42 6.17	10.778	21 22 54.4	26.19	16 17.99	70.23	9 12.56	0.921
Fri.	15	19 46 24.57	10.749	21 12 13.2	27.21	16 17.93	70.14	9 34.35	0.893
Sat.	16	19 50 42.28	10.720	21 1 7.5	28.22	16 17.86	70.05	9 55.44	0.864
Sun.	17	19 54 59.27	10.690	20 49 37.7	29.22	16 17.79	69.95	10 15.82	0.834
Mon.	18	19 59 15.53	10.660	20 37 44.3	30.20	16 17.71	69.85	10 35.48	0.804
Tues.	19	20 3 31.05	10.629	20 25 27.6	31.17	16 17.63	69.75	10 54.39	0.773
Wed.	20	20 7 45.83	10.598	20 12 47.7	32.12	16 17.54	69.65	11 12.56	0.741
Thur.	21	20 11 59.84	10.566	19 59 45.2	33.06	16 17.45	69.55	11 29.97	0.709
Fri.	22	20 16 13.07	10.534	19 46 20.3	33.98	16 17.35	69.44	11 46.60	0.676
Sat.	23	20 20 25.52	10.501	19 32 33.5	34.89	16 17.24	69.33	12 2.46	0.644
Sun.	24	20 24 37.19	10.468	19 18 25.1	35.79	16 17.13	69.22	12 17.53	0.611
Mon.	25	20 28 48.06	10.435	19 3 55.2	36.67	16 17.01	69.11	12 31.79	0.578
Tues.	26	20 32 58.12	10.401	18 49 4.2	37.54	16 16.89	69.00	12 45.26	0.545
Wed.	27	20 37 7.39	10.368	18 33 52.7	38.39	16 16.76	68.89	12 57.94	0.512
Thur.	28	20 41 15.87	10.334	18 18 21.0	39.22	16 16.63	68.78	13 9.83	0.479
Fri.	29	20 45 23.54	10.301	18 2 29.6	40.04	16 16.49	68.67	13 20.92	0.446
Sat.	30	20 49 30.41	10.268	17 46 18.7	40.84	16 16.35	68.55	13 31.21	0.412
Sun.	31	20 53 36.48	10.235	17 29 48.6	41.63	16 16.20	68.43	13 40.69	0.379
Mon.	32	20 57 41.74	10.201	S. 17 13 0.0	42.40	16 16.04	68.32	13 49.37	0.345

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Fri.	1	18 45 14.68	11.044	S. 23 2 51.4	11.94	3 37.82	1.187	18 41 36.86
Sat.	2	18 49 39.60	11.031	22 57 50.9	13.09	4 6.18	1.175	18 45 33.42
Sun.	3	18 54 4.19	11.017	22 52 23.0	14.23	4 34.22	1.161	18 49 29.97
Mon.	4	18 58 28.43	11.002	22 46 27.8	15.37	5 1.90	1.146	18 53 26.53
Tues.	5	19 2 52.29	10.985	22 40 5.4	16.50	5 29.20	1.129	18 57 23.09
Wed.	6	19 7 15.73	10.967	22 33 16.0	17.62	5 56.09	1.111	19 1 19.64
Thur.	7	19 11 38.72	10.948	22 25 59.9	18.73	6 22.52	1.092	19 5 16.20
Fri.	8	19 16 1.23	10.927	22 18 17.2	19.82	6 48.47	1.071	19 9 12.76
Sat.	9	19 20 23.23	10.905	22 10 8.2	20.91	7 13.92	1.049	19 13 9.31
Sun.	10	19 24 44.69	10.882	22 1 33.3	21.99	7 38.82	1.025	19 17 5.87
Mon.	11	19 29 5.57	10.858	21 52 32.6	23.06	8 3.14	1.001	19 21 2.43
Tues.	12	19 33 25.85	10.833	21 43 6.3	24.12	8 26.87	0.975	19 24 58.98
Wed.	13	19 37 45.51	10.806	21 33 14.7	25.16	8 49.97	0.948	19 28 55.54
Thur.	14	19 42 4.52	10.778	21 22 58.4	26.19	9 12.42	0.921	19 32 52.10
Fri.	15	19 46 22.86	10.749	21 12 17.5	27.21	9 34.21	0.893	19 36 48.65
Sat.	16	19 50 40.51	10.720	21 1 12.1	28.22	9 55.30	0.864	19 40 45.21
Sun.	17	19 54 57.45	10.690	20 49 42.6	29.22	10 15.68	0.834	19 44 41.77
Mon.	18	19 59 13.66	10.660	20 37 49.5	30.20	10 35.34	0.804	19 48 38.32
Tues.	19	20 3 29.13	10.629	20 25 33.1	31.17	10 54.25	0.773	19 52 34.88
Wed.	20	20 7 43.86	10.598	20 12 53.6	32.12	11 12.42	0.741	19 56 31.44
Thur.	21	20 11 57.82	10.566	19 59 51.5	33.06	11 29.83	0.709	20 0 27.99
Fri.	22	20 16 11.01	10.534	19 46 26.9	33.98	11 46.46	0.676	20 4 24.55
Sat.	23	20 20 23.42	10.501	19 32 40.4	34.89	12 2.32	0.644	20 8 21.10
Sun.	24	20 24 35.05	10.468	19 18 32.3	35.79	12 17.39	0.611	20 12 17.66
Mon.	25	20 28 45.88	10.435	19 4 2.8	36.67	12 31.66	0.578	20 16 14.22
Tues.	26	20 32 55.91	10.401	18 49 12.2	37.54	12 45.14	0.545	20 20 10.77
Wed.	27	20 37 5.15	10.368	18 34 1.0	38.39	12 57.82	0.512	20 24 7.33
Thur.	28	20 41 13.60	10.334	18 18 29.6	39.22	13 9.72	0.479	20 28 3.88
Fri.	29	20 45 21.25	10.301	18 2 38.5	40.04	13 20.81	0.446	20 32 0.44
Sat.	30	20 49 28.10	10.268	17 46 27.9	40.84	13 31.11	0.412	20 35 56.99
Sun.	31	20 53 34.15	10.235	17 29 58.1	41.63	13 40.60	0.379	20 39 53.55
Mon.	32	20 57 39.39	10.201	S. 17 13 9.8	42.40	13 49.29	0.345	20 43 50.10

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	1	280 24 12.7	23 57.8	152.92	—0.02	9.9926509	1.2	5 17 30.98
2	2	281 25 22.8	25 7.8	152.92	+0.09	.9926547	2.0	5 13 35.07
3	3	282 26 33.1	26 18.0	152.93	0.20	.9926606	2.8	5 9 39.16
4	4	283 27 43.6	27 28.3	152.93	0.31	.9926684	3.6	5 5 43.25
5	5	284 28 54.2	28 38.7	152.94	0.43	.9926781	4.4	5 1 47.34
6	6	285 30 4.8	29 49.1	152.94	0.55	.9926896	5.2	4 57 51.43
7	7	286 31 15.5	30 59.7	152.94	0.66	.9927029	6.0	4 53 55.52
8	8	287 32 26.1	32 10.2	152.94	0.75	.9927179	6.7	4 49 59.61
9	9	288 33 36.6	33 20.5	152.93	0.83	.9927346	7.4	4 46 3.70
10	10	289 34 46.8	34 30.5	152.91	0.88	.9927529	8.1	4 42 7.78
11	11	290 35 56.4	35 39.9	152.89	0.90	.9927730	8.8	4 38 11.87
12	12	291 37 5.4	36 48.8	152.86	0.89	.9927948	9.4	4 34 15.96
13	13	292 38 13.8	37 57.1	152.83	0.85	.9928183	10.1	4 30 20.05
14	14	293 39 21.5	39 4.6	152.80	0.78	.9928436	10.9	4 26 24.14
15	15	294 40 28.5	40 11.4	152.77	0.69	.9928709	11.8	4 22 28.23
16	16	295 41 34.7	41 17.4	152.74	0.57	.9929002	12.7	4 18 32.32
17	17	296 42 40.0	42 22.6	152.70	0.44	.9929317	13.6	4 14 36.41
18	18	297 43 44.4	43 26.9	152.67	0.31	.9929655	14.6	4 10 40.50
19	19	298 44 47.9	44 30.2	152.63	0.17	.9930017	15.6	4 6 44.59
20	20	299 45 50.6	45 32.7	152.60	+0.04	.9930403	16.7	4 2 48.68
21	21	300 46 52.4	46 34.3	152.56	—0.09	.9930815	17.7	3 58 52.77
22	22	301 47 53.3	47 35.1	152.52	0.19	.9931253	18.8	3 54 56.86
23	23	302 48 53.3	48 35.0	152.48	0.27	.9931719	20.0	3 51 0.95
24	24	303 49 52.4	49 34.0	152.45	0.32	.9932213	21.1	3 47 5.04
25	25	304 50 50.7	50 32.1	152.41	0.34	.9932733	22.2	3 43 9.13
26	26	305 51 48.2	51 29.4	152.38	0.33	.9933279	23.3	3 39 13.22
27	27	306 52 45.0	52 26.1	152.35	0.30	.9933850	24.3	3 35 17.31
28	28	307 53 41.0	53 22.0	152.32	0.24	.9934445	25.3	3 31 21.40
29	29	308 54 36.1	54 17.0	152.29	0.15	.9935064	26.3	3 27 25.49
30	30	309 55 30.6	55 11.3	152.26	—0.03	.9935706	27.2	3 23 29.58
31	31	310 56 24.4	56 4.9	152.22	+0.09	.9936369	28.0	3 19 33.67
32	32	311 57 17.4	56 57.8	152.19	+0.21	9.9937050	28.7	3 15 37.76

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 2.5	15 7.5	55 5.4	+1.45	55 24.0	+1.65	17 47.3	1.86	21.7
2	15 13.2	15 19.5	55 45.0	1.84	56 8.1	2.01	18 33.1	1.97	22.7
3	15 26.4	15 33.7	56 33.3	2.16	57 0.1	2.29	19 22.1	2.12	23.7
4	15 41.4	15 49.3	57 28.2	2.38	57 57.3	2.43	20 15.0	2.29	24.7
5	15 57.3	16 5.2	58 26.6	2.44	58 55.8	2.39	21 11.9	2.45	25.7
6	16 12.9	16 20.1	59 24.0	2.28	59 50.4	2.10	22 12.1	2.56	26.7
7	16 26.6	16 32.3	60 14.5	1.87	60 35.4	1.59	23 14.1	2.59	27.7
8	16 37.0	16 40.5	60 52.6	1.25	61 5.5	0.88	δ		28.7
9	16 42.8	16 43.7	61 13.7	+0.48	61 17.0	+0.07	0 15.9	2.54	0.2
10	16 43.2	16 41.5	61 15.4	−0.34	61 9.0	−0.72	1 15.8	2.44	1.2
11	16 38.5	16 34.4	60 58.0	1.08	60 43.0	1.40	2 12.8	2.32	2.2
12	16 29.3	16 23.5	60 24.5	1.66	60 3.2	1.87	3 7.1	2.21	3.2
13	16 17.1	16 10.3	59 39.7	2.02	59 14.6	2.12	3 59.2	2.13	4.2
14	16 3.3	15 56.2	58 48.8	2.17	58 22.7	2.17	4 49.8	2.09	5.2
15	15 49.1	15 42.2	57 56.8	2.13	57 31.5	2.07	5 39.7	2.08	6.2
16	15 35.6	15 29.3	57 7.1	1.98	56 44.0	1.86	6 29.6	2.08	7.2
17	15 23.4	15 17.9	56 22.4	1.74	56 2.3	1.61	7 19.7	2.09	8.2
18	15 12.9	15 8.3	55 43.7	1.48	55 26.8	1.35	8 10.0	2.10	9.2
19	15 4.1	15 0.4	55 11.4	1.21	54 57.6	1.08	9 0.4	2.09	10.2
20	14 57.0	14 54.1	54 45.4	0.96	54 34.6	0.84	9 50.2	2.05	11.2
21	14 51.6	14 49.4	54 25.3	0.72	54 17.4	0.61	10 38.9	2.00	12.2
22	14 47.6	14 46.1	54 10.8	0.50	54 5.4	0.39	11 26.1	1.93	13.2
23	14 45.0	14 44.3	54 1.3	0.29	53 58.5	−0.18	12 11.6	1.86	14.2
24	14 43.8	14 43.7	53 56.9	−0.08	53 56.5	+0.03	12 55.5	1.80	15.2
25	14 44.0	14 44.7	53 57.5	+0.14	54 0.0	0.26	13 38.2	1.76	16.2
26	14 45.7	14 47.2	54 3.9	0.39	54 9.3	0.52	14 20.1	1.74	17.2
27	14 49.2	14 51.6	54 16.5	0.67	54 25.4	0.82	15 2.0	1.76	18.2
28	14 54.5	14 57.9	54 36.1	0.97	54 48.8	1.13	15 44.6	1.80	19.2
29	15 1.9	15 6.4	55 3.4	1.30	55 20.0	1.47	16 28.6	1.88	20.2
30	15 11.5	15 17.1	55 38.7	1.64	55 59.3	1.80	17 15.1	1.99	21.2
31	15 23.3	15 29.9	56 21.8	1.95	56 46.2	2.10	18 4.5	2.13	22.2
32	15 37.0	15 44.4	57 12.1	+2.22	57 39.4	+2.31	18 57.6	2.28	23.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 57 22.87	1.9092	S. 4 21 46.8	10.740
1	11 59 17.50	1.9118	4 32 30.9	10.731
2	12 1 12.29	1.9145	4 43 14.5	10.721
3	12 3 7.24	1.9172	4 53 57.5	10.711
4	12 5 2.36	1.9200	5 4 39.8	10.701
5	12 6 57.65	1.9228	5 15 21.4	10.688
6	12 8 53.10	1.9257	5 26 2.3	10.675
7	12 10 48.73	1.9286	5 36 42.4	10.661
8	12 12 44.53	1.9316	5 47 21.6	10.647
9	12 14 40.52	1.9347	5 57 59.9	10.632
10	12 16 36.69	1.9378	6 8 37.4	10.616
11	12 18 33.05	1.9410	6 19 13.9	10.600
12	12 20 29.61	1.9443	6 29 49.4	10.583
13	12 22 26.37	1.9476	6 40 23.8	10.565
14	12 24 23.32	1.9509	6 50 57.2	10.547
15	12 26 20.48	1.9543	7 1 29.4	10.528
16	12 28 17.84	1.9578	7 12 0.5	10.508
17	12 30 15.42	1.9614	7 22 30.3	10.487
18	12 32 13.21	1.9650	7 32 58.9	10.465
19	12 34 11.22	1.9687	7 43 26.1	10.442
20	12 36 9.45	1.9724	7 53 51.9	10.418
21	12 38 7.91	1.9762	8 4 16.3	10.394
22	12 40 6.59	1.9801	8 14 39.2	10.369
23	12 42 5.51	1.9840	S. 8 25 0.6	10.344

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 44 4.67	1.9879	S. 8 35 20.5	10.318
1	12 46 4.06	1.9919	8 45 38.8	10.291
2	12 48 3.70	1.9960	8 55 55.4	10.263
3	12 50 3.59	2.0002	9 6 10.3	10.234
4	12 52 3.73	2.0044	9 16 23.5	10.204
5	12 54 4.13	2.0087	9 26 34.9	10.174
6	12 56 4.78	2.0130	9 36 44.4	10.143
7	12 58 5.69	2.0174	9 46 52.0	10.111
8	13 0 6.87	2.0219	9 56 57.7	10.078
9	13 2 8.32	2.0264	10 7 1.4	10.044
10	13 4 10.04	2.0310	10 17 3.0	10.009
11	13 6 12.04	2.0356	10 27 2.5	9.974
12	13 8 14.31	2.0403	10 36 59.9	9.937
13	13 10 16.87	2.0450	10 46 55.0	9.899
14	13 12 19.71	2.0498	10 56 47.8	9.860
15	13 14 22.84	2.0547	11 6 38.2	9.821
16	13 16 26.27	2.0595	11 16 26.3	9.781
17	13 18 29.99	2.0644	11 26 11.9	9.739
18	13 20 34.00	2.0694	11 35 55.0	9.696
19	13 22 38.32	2.0745	11 45 35.5	9.652
20	13 24 42.94	2.0796	11 55 13.3	9.608
21	13 26 47.86	2.0847	12 4 48.5	9.563
22	13 28 53.10	2.0899	12 14 20.9	9.517
23	13 30 58.65	2.0952	12 23 50.5	9.469
24	13 33 4.52	2.1005	S. 12 33 17.2	9.421

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 33 4.52	2.1005	S. 12 33 17.2	9.421
1	13 35 10.71	2.1058	12 42 41.0	9.372
2	13 37 17.22	2.1112	12 52 1.9	9.322
3	13 39 24.06	2.1167	13 1 19.7	9.271
4	13 41 31.22	2.1222	13 10 34.4	9.219
5	13 43 38.72	2.1278	13 19 45.9	9.165
6	13 45 46.55	2.1334	13 28 54.2	9.110
7	13 47 54.72	2.1390	13 37 59.2	9.055
8	13 50 3.23	2.1447	13 47 0.8	8.999
9	13 52 12.09	2.1505	13 55 59.0	8.941
10	13 54 21.29	2.1562	14 4 53.7	8.882
11	13 56 30.84	2.1620	14 13 44.8	8.822
12	13 58 40.73	2.1678	14 22 32.3	8.761
13	14 0 50.97	2.1737	14 31 16.1	8.699
14	14 3 1.57	2.1796	14 39 56.2	8.636
15	14 5 12.53	2.1856	14 48 32.4	8.571
16	14 7 23.84	2.1915	14 57 4.7	8.505
17	14 9 35.51	2.1975	15 5 33.1	8.439
18	14 11 47.54	2.2035	15 13 57.4	8.371
19	14 13 59.94	2.2095	15 22 17.6	8.302
20	14 16 12.70	2.2157	15 30 33.6	8.232
21	14 18 25.83	2.2218	15 38 45.4	8.160
22	14 20 39.32	2.2280	15 46 52.8	8.087
23	14 22 53.19	2.2342	S. 15 54 55.8	8.013

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 25 7.43	2.2404	S. 16 2 54.4	7.938
1	14 27 22.04	2.2467	16 10 48.5	7.862
2	14 29 37.03	2.2529	16 18 37.9	7.785
3	14 31 52.40	2.2592	16 26 22.6	7.706
4	14 34 8.14	2.2655	16 34 2.6	7.626
5	14 36 24.26	2.2718	16 41 37.7	7.545
6	14 38 40.76	2.2781	16 49 8.0	7.463
7	14 40 57.64	2.2845	16 56 33.3	7.379
8	14 43 14.90	2.2908	17 3 53.5	7.294
9	14 45 32.54	2.2972	17 11 8.6	7.208
10	14 47 50.56	2.3035	17 18 18.5	7.120
11	14 50 8.96	2.3099	17 25 23.1	7.032
12	14 52 27.75	2.3163	17 32 22.4	6.943
13	14 54 46.92	2.3227	17 39 16.2	6.852
14	14 57 6.47	2.3290	17 46 4.6	6.760
15	14 59 26.40	2.3354	17 52 47.4	6.666
16	15 1 46.72	2.3418	17 59 24.5	6.571
17	15 4 7.42	2.3482	18 5 55.9	6.475
18	15 6 28.50	2.3546	18 12 21.5	6.377
19	15 8 49.96	2.3609	18 18 41.2	6.278
20	15 11 11.81	2.3673	18 24 54.9	6.178
21	15 13 34.04	2.3736	18 31 2.6	6.077
22	15 15 56.64	2.3799	18 37 4.2	5.975
23	15 18 19.62	2.3861	18 42 59.6	5.871
24	15 20 42.97	2.3924	S. 18 48 48.7	5.766

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ' "	"
0	15 20 42.97	2.3924	S. 18 48 48.7	5.766
1	15 23 6.70	2.3987	18 54 31.5	5.660
2	15 25 30.81	2.4049	19 0 7.9	5.552
3	15 27 55.29	2.4110	19 5 37.8	5.443
4	15 30 20.13	2.4172	19 11 1.1	5.333
5	15 32 45.35	2.4233	19 16 17.8	5.222
6	15 35 10.93	2.4294	19 21 27.8	5.110
7	15 37 36.88	2.4355	19 26 31.0	4.997
8	15 40 3.19	2.4415	19 31 27.4	4.882
9	15 42 29.86	2.4475	19 36 16.8	4.766
10	15 44 56.89	2.4534	19 40 59.3	4.649
11	15 47 24.27	2.4592	19 45 34.7	4.530
12	15 49 52.00	2.4651	19 50 2.9	4.410
13	15 52 20.08	2.4709	19 54 23.9	4.289
14	15 54 48.51	2.4766	19 58 37.6	4.167
15	15 57 17.28	2.4823	20 2 43.9	4.043
16	15 59 46.39	2.4879	20 6 42.8	3.918
17	16 2 15.84	2.4935	20 10 34.2	3.793
18	16 4 45.62	2.4990	20 14 18.0	3.667
19	16 7 15.72	2.5044	20 17 54.2	3.539
20	16 9 46.15	2.5098	20 21 22.7	3.410
21	16 12 16.90	2.5151	20 24 43.4	3.280
22	16 14 47.96	2.5203	20 27 56.3	3.149
23	16 17 19.34	2.5255	S. 20 31 1.3	3.017

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 19 51.02	2.5306	S. 20 33 58.3	2.884
1	16 22 23.00	2.5356	20 36 47.3	2.749
2	16 24 55.28	2.5404	20 39 28.2	2.614
3	16 27 27.85	2.5452	20 42 1.0	2.478
4	16 30 0.71	2.5499	20 44 25.6	2.341
5	16 32 33.85	2.5546	20 46 41.9	2.203
6	16 35 7.27	2.5592	20 48 50.0	2.064
7	16 37 40.95	2.5636	20 50 49.7	1.925
8	16 40 14.90	2.5680	20 52 41.0	1.785
9	16 42 49.11	2.5723	20 54 23.8	1.643
10	16 45 23.57	2.5765	20 55 58.2	1.500
11	16 47 58.28	2.5805	20 57 24.0	1.357
12	16 50 33.23	2.5844	20 58 41.1	1.213
13	16 53 8.42	2.5883	20 59 49.6	1.069
14	16 55 43.83	2.5921	21 0 49.4	0.924
15	16 58 19.47	2.5958	21 1 40.4	0.777
16	17 0 55.33	2.5994	21 2 22.7	0.630
17	17 3 31.40	2.6028	21 2 56.1	0.483
18	17 6 7.67	2.6061	21 3 20.7	0.335
19	17 8 44.14	2.6093	21 3 36.4	0.187
20	17 11 20.79	2.6124	21 3 43.1	0.038
21	17 13 57.63	2.6154	21 3 40.8	0.112
22	17 16 34.64	2.6183	21 3 29.6	0.262
23	17 19 11.82	2.6210	21 3 9.3	0.413
24	17 21 49.16	2.6236	S. 21 2 40.0	0.564

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ' "	"
0	17 21 49.16	2.6236	S. 21 2 40.0	0.564
1	17 24 26.65	2.6261	21 2 1.6	0.716
2	17 27 4.29	2.6285	21 1 14.1	0.868
3	17 29 42.07	2.6308	21 0 17.5	1.020
4	17 32 19.98	2.6329	20 59 11.7	1.172
5	17 34 58.02	2.6349	20 57 56.8	1.325
6	17 37 36.17	2.6367	20 56 32.7	1.478
7	17 40 14.42	2.6384	20 54 59.4	1.631
8	17 42 52.78	2.6400	20 53 17.0	1.784
9	17 45 31.23	2.6416	20 51 25.4	1.937
10	17 48 9.77	2.6430	20 49 24.5	2.090
11	17 50 48.39	2.6442	20 47 14.4	2.244
12	17 53 27.08	2.6453	20 44 55.2	2.397
13	17 56 5.83	2.6463	20 42 26.7	2.551
14	17 58 44.64	2.6472	20 39 49.0	2.704
15	18 1 23.50	2.6479	20 37 2.1	2.858
16	18 4 2.39	2.6485	20 34 6.0	3.011
17	18 6 41.31	2.6489	20 31 0.7	3.165
18	18 9 20.26	2.6493	20 27 46.2	3.318
19	18 11 59.23	2.6495	20 24 22.5	3.471
20	18 14 38.20	2.6496	20 20 49.7	3.624
21	18 17 17.18	2.6496	20 17 7.7	3.776
22	18 19 56.15	2.6494	20 13 16.6	3.927
23	18 22 35.11	2.6491	S. 20 9 16.4	4.078

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 25 14.04	2.6487	S. 20 5 7.2	4.229
1	18 27 52.95	2.6482	20 0 48.9	4.380
2	18 30 31.82	2.6475	19 56 21.6	4.530
3	18 33 10.65	2.6467	19 51 45.3	4.680
4	18 35 49.42	2.6458	19 47 0.1	4.829
5	18 38 28.14	2.6448	19 42 6.0	4.977
6	18 41 6.79	2.6437	19 37 2.9	5.125
7	18 43 45.37	2.6424	19 31 51.0	5.272
8	18 46 23.88	2.6410	19 26 30.3	5.418
9	18 49 2.30	2.6395	19 21 0.9	5.563
10	18 51 40.62	2.6379	19 15 22.7	5.708
11	18 54 18.85	2.6362	19 9 35.9	5.852
12	18 56 56.97	2.6344	19 3 40.4	5.995
13	18 59 34.98	2.6325	18 57 36.4	6.138
14	19 2 12.87	2.6305	18 51 23.8	6.280
15	19 4 50.64	2.6283	18 45 2.8	6.420
16	19 7 28.27	2.6260	18 38 33.4	6.559
17	19 10 5.77	2.6237	18 31 55.7	6.698
18	19 12 43.12	2.6213	18 25 9.6	6.836
19	19 15 20.33	2.6188	18 18 15.3	6.972
20	19 17 57.38	2.6162	18 11 13.0	7.107
21	19 20 34.27	2.6135	18 4 2.5	7.242
22	19 23 11.00	2.6107	17 56 44.0	7.376
23	19 25 47.56	2.6078	17 49 17.5	7.508
24	19 28 23.94	2.6048	S. 17 41 43.1	7.639

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 28 23.94	2.6048	S. 17 41 43.1	7.639
1	19 31 0.14	2.6017	17 34 0.9	7.768
2	19 33 36.15	2.5986	17 26 11.0	7.896
3	19 36 11.97	2.5954	17 18 13.4	8.023
4	19 38 47.60	2.5921	17 10 8.3	8.149
5	19 41 23.03	2.5887	17 1 55.7	8.273
6	19 43 58.25	2.5852	16 53 35.6	8.396
7	19 46 33.26	2.5817	16 45 8.2	8.518
8	19 49 8.06	2.5781	16 36 33.5	8.638
9	19 51 42.64	2.5745	16 27 51.7	8.757
10	19 54 17.00	2.5708	16 19 2.7	8.875
11	19 56 51.14	2.5671	16 10 6.7	8.991
12	19 59 25.05	2.5633	16 1 3.8	9.105
13	20 1 58.73	2.5594	15 51 54.1	9.218
14	20 4 32.17	2.5554	15 42 37.6	9.329
15	20 7 5.38	2.5514	15 33 14.5	9.439
16	20 9 38.34	2.5473	15 23 44.9	9.548
17	20 12 11.06	2.5432	15 14 8.8	9.655
18	20 14 43.53	2.5391	15 4 26.3	9.760
19	20 17 15.76	2.5349	14 54 37.5	9.864
20	20 19 47.73	2.5307	14 44 42.6	9.966
21	20 22 19.45	2.5265	14 34 41.6	10.067
22	20 24 50.91	2.5228	14 24 34.7	10.166
23	20 27 22.12	2.5190	S. 14 14 21.8	10.263

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 29 53.07	2.5137	S. 14 4 3.0	10.359
1	20 32 23.76	2.5093	13 53 38.6	10.453
2	20 34 54.18	2.5049	13 43 8.7	10.545
3	20 37 24.34	2.5004	13 32 33.3	10.636
4	20 39 54.23	2.4960	13 21 52.4	10.725
5	20 42 23.85	2.4915	13 11 6.3	10.812
6	20 44 53.21	2.4871	13 0 15.0	10.898
7	20 47 22.30	2.4826	12 49 18.6	10.982
8	20 49 51.12	2.4781	12 38 17.2	11.064
9	20 52 19.67	2.4736	12 27 10.9	11.144
10	20 54 47.95	2.4691	12 15 59.9	11.222
11	20 57 15.96	2.4645	12 4 44.2	11.299
12	20 59 43.69	2.4600	11 53 24.0	11.374
13	21 2 11.15	2.4554	11 41 59.3	11.448
14	21 4 38.34	2.4509	11 30 30.2	11.520
15	21 7 5.26	2.4464	11 18 56.9	11.590
16	21 9 31.91	2.4419	11 7 19.4	11.658
17	21 11 58.29	2.4373	10 55 37.9	11.725
18	21 14 24.39	2.4328	10 43 52.4	11.789
19	21 16 50.22	2.4282	10 32 3.1	11.852
20	21 19 15.78	2.4237	10 20 10.1	11.914
21	21 21 41.07	2.4192	10 8 13.4	11.974
22	21 24 6.09	2.4147	9 56 13.2	12.032
23	21 26 30.84	2.4103	9 44 9.6	12.087
24	21 28 55.33	2.4059	S. 9 32 2.7	12.141

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 28 55.33	2.4059	S. 9 32 2.7	12.141
1	21 31 19.55	2.4015	9 19 52.6	12.194
2	21 33 43.51	2.3971	9 7 39.4	12.245
3	21 36 7.20	2.3927	8 55 23.2	12.295
4	21 38 30.63	2.3883	8 43 4.0	12.343
5	21 40 53.80	2.3840	8 30 42.0	12.388
6	21 43 16.71	2.3796	8 18 17.4	12.432
7	21 45 39.36	2.3753	8 5 50.2	12.474
8	21 48 1.75	2.3710	7 53 20.5	12.515
9	21 50 23.89	2.3668	7 40 48.4	12.555
10	21 52 45.77	2.3626	7 28 13.9	12.592
11	21 55 7.40	2.3585	7 15 37.3	12.627
12	21 57 28.79	2.3544	7 2 58.6	12.661
13	21 59 49.93	2.3503	6 50 17.9	12.694
14	22 2 10.82	2.3462	6 37 35.3	12.725
15	22 4 31.47	2.3421	6 24 50.9	12.754
16	22 6 51.87	2.3381	6 12 4.8	12.781
17	22 9 12.04	2.3342	5 59 17.1	12.807
18	22 11 31.97	2.3303	5 46 28.0	12.831
19	22 13 51.67	2.3264	5 33 37.4	12.854
20	22 16 11.13	2.3225	5 20 45.5	12.875
21	22 18 30.36	2.3187	5 7 52.4	12.894
22	22 20 49.37	2.3149	4 54 58.2	12.912
23	22 23 8.16	2.3112	S. 4 42 2.9	12.929

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 25 26.72	2.3075	S. 4 29 6.7	12.944
1	22 27 45.06	2.3039	4 16 9.7	12.957
2	22 30 3.19	2.3003	4 3 11.9	12.968
3	22 32 21.10	2.2968	3 50 13.5	12.978
4	22 34 38.80	2.2933	3 37 14.5	12.987
5	22 36 56.30	2.2898	3 24 15.1	12.994
6	22 39 13.59	2.2864	3 11 15.2	13.000
7	22 41 30.68	2.2831	2 58 15.0	13.005
8	22 43 47.56	2.2797	2 45 14.6	13.008
9	22 46 4.24	2.2764	2 32 14.1	13.008
10	22 48 20.73	2.2732	2 19 13.6	13.008
11	22 50 37.03	2.2701	2 6 13.1	13.006
12	22 52 53.14	2.2670	1 53 12.8	13.003
13	22 55 9.06	2.2639	1 40 12.7	12.999
14	22 57 24.80	2.2609	1 27 12.9	12.994
15	22 59 40.36	2.2579	1 14 13.5	12.987
16	23 1 55.75	2.2550	1 1 14.5	12.978
17	23 4 10.96	2.2521	0 48 16.1	12.968
18	23 6 26.00	2.2493	0 35 18.4	12.957
19	23 8 40.88	2.2466	0 22 21.4	12.944
20	23 10 55.59	2.2439	S. 0 9 25.1	12.930
21	23 13 10.14	2.2413	N. 0 3 30.3	12.915
22	23 15 24.54	2.2387	0 16 24.7	12.899
23	23 17 38.78	2.2361	0 29 18.1	12.881
24	23 19 52.87	2.2336	N. 0 42 10.4	12.862

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 19 52.87	2.2336	N. 0 42 10.4	12.862
1	23 22 6.81	2.2312	0 55 1.5	12.842
2	23 24 20.61	2.2288	1 7 51.4	12.820
3	23 26 34.26	2.2264	1 20 39.9	12.797
4	23 28 47.77	2.2241	1 33 27.0	12.773
5	23 31 1.15	2.2218	1 46 12.6	12.747
6	23 33 14.39	2.2196	1 58 56.7	12.720
7	23 35 27.50	2.2174	2 11 39.2	12.693
8	23 37 40.48	2.2153	2 24 19.9	12.664
9	23 39 53.34	2.2133	2 36 58.8	12.634
10	23 42 6.08	2.2113	2 49 36.0	12.603
11	23 44 18.70	2.2094	3 2 11.3	12.571
12	23 46 31.20	2.2075	3 14 44.6	12.538
13	23 48 43.59	2.2057	3 27 15.9	12.503
14	23 50 55.88	2.2039	3 39 45.0	12.467
15	23 53 8.06	2.2022	3 52 11.9	12.431
16	23 55 20.14	2.2005	4 4 36.6	12.393
17	23 57 32.12	2.1989	4 16 59.1	12.354
18	23 59 44.00	2.1973	4 29 19.2	12.314
19	0 1 55.79	2.1958	4 41 36.8	12.273
20	0 4 7.49	2.1943	4 53 52.0	12.231
21	0 6 19.10	2.1929	5 6 4.6	12.188
22	0 8 30.63	2.1915	5 18 14.6	12.144
23	0 10 42.08	2.1902	N. 5 30 21.9	12.099

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 12 53.45	2.1889	N. 5 42 26.5	12.053
1	0 15 4.74	2.1876	5 54 28.3	12.006
2	0 17 15.96	2.1864	6 6 27.2	11.958
3	0 19 27.11	2.1853	6 18 23.2	11.909
4	0 21 38.19	2.1842	6 30 16.3	11.859
5	0 23 49.21	2.1831	6 42 6.3	11.807
6	0 26 0.16	2.1821	6 53 53.2	11.755
7	0 28 11.05	2.1811	7 5 37.0	11.703
8	0 30 21.89	2.1802	7 17 17.6	11.650
9	0 32 32.68	2.1793	7 28 55.0	11.595
10	0 34 43.41	2.1785	7 40 29.0	11.539
11	0 36 54.09	2.1777	7 51 59.6	11.483
12	0 39 4.73	2.1770	8 3 26.9	11.426
13	0 41 15.32	2.1763	8 14 50.7	11.368
14	0 43 25.88	2.1756	8 26 11.0	11.309
15	0 45 36.40	2.1750	8 37 27.7	11.248
16	0 47 46.88	2.1744	8 48 40.8	11.187
17	0 49 57.32	2.1738	8 59 50.2	11.126
18	0 52 7.74	2.1733	9 10 55.9	11.064
19	0 54 18.13	2.1729	9 21 57.8	11.001
20	0 56 28.49	2.1725	9 32 56.0	10.937
21	0 58 38.83	2.1721	9 43 50.3	10.873
22	1 0 49.14	2.1717	9 54 40.7	10.807
23	1 2 59.43	2.1714	10 5 27.1	10.740
24	1 5 9.70	2.1711	N.10 16 9.5	10.673

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 5 9.70	2.1711	N.10 16 9.5	10.673
1	1 7 19.96	2.1708	10 26 47.8	10.605
2	1 9 30.20	2.1706	10 37 22.1	10.537
3	1 11 40.43	2.1705	10 47 52.2	10.468
4	1 13 50.65	2.1703	10 58 18.2	10.398
5	1 16 0.87	2.1702	11 8 39.9	10.327
6	1 18 11.08	2.1701	11 18 57.4	10.255
7	1 20 21.29	2.1701	11 29 10.5	10.183
8	1 22 31.49	2.1700	11 39 19.3	10.110
9	1 24 41.69	2.1700	11 49 23.7	10.037
10	1 26 51.89	2.1701	11 59 23.7	9.963
11	1 29 2.10	2.1702	12 9 19.2	9.887
12	1 31 12.31	2.1703	12 19 10.1	9.811
13	1 33 22.53	2.1704	12 28 56.5	9.735
14	1 35 32.75	2.1705	12 38 38.3	9.658
15	1 37 42.98	2.1707	12 48 15.4	9.580
16	1 39 53.23	2.1709	12 57 47.9	9.502
17	1 42 3.49	2.1711	13 7 15.6	9.423
18	1 44 13.76	2.1713	13 16 38.6	9.343
19	1 46 24.05	2.1716	13 25 56.8	9.263
20	1 48 34.35	2.1719	13 35 10.2	9.182
21	1 50 44.67	2.1722	13 44 18.7	9.101
22	1 52 55.01	2.1725	13 53 22.3	9.019
23	1 55 5.36	2.1728	N.14 2 20.9	8.936

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 57 15.74	2.1731	N.14 11 14.6	8.853
1	1 59 26.14	2.1735	14 20 3.3	8.769
2	2 1 36.56	2.1739	14 28 46.9	8.685
3	2 3 47.01	2.1743	14 37 25.4	8.600
4	2 5 57.48	2.1747	14 45 58.9	8.515
5	2 8 7.98	2.1751	14 54 27.2	8.429
6	2 10 18.50	2.1755	15 2 50.4	8.342
7	2 12 29.04	2.1760	15 11 8.3	8.255
8	2 14 39.62	2.1765	15 19 21.0	8.168
9	2 16 50.23	2.1770	15 27 28.4	8.080
10	2 19 0.86	2.1775	15 35 30.6	7.991
11	2 21 11.52	2.1779	15 43 27.4	7.902
12	2 23 22.21	2.1784	15 51 18.8	7.812
13	2 25 32.93	2.1789	15 59 4.8	7.722
14	2 27 43.68	2.1794	16 6 45.5	7.632
15	2 29 54.46	2.1799	16 14 20.7	7.541
16	2 32 5.27	2.1804	16 21 50.4	7.450
17	2 34 16.11	2.1810	16 29 14.6	7.358
18	2 36 26.99	2.1815	16 36 33.3	7.265
19	2 38 37.90	2.1820	16 43 46.4	7.172
20	2 40 48.83	2.1825	16 50 53.9	7.079
21	2 42 59.79	2.1830	16 57 55.8	6.985
22	2 45 10.79	2.1835	17 4 52.1	6.891
23	2 47 21.82	2.1841	17 11 42.7	6.797
24	2 49 32.88	2.1846	N.17 18 27.7	6.702

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 49 32.88	2.1846	N.17 18 27.7	6.702
1	2 51 43.97	2.1851	17 25 6.9	6.606
2	2 53 55.09	2.1856	17 31 40.4	6.510
3	2 56 6.24	2.1861	17 38 8.1	6.414
4	2 58 17.42	2.1866	17 44 30.1	6.318
5	3 0 28.63	2.1871	17 50 46.3	6.221
6	3 2 39.87	2.1876	17 56 56.6	6.124
7	3 4 51.14	2.1880	18 3 1.1	6.026
8	3 7 2.43	2.1885	18 8 59.7	5.928
9	3 9 13.75	2.1889	18 14 52.4	5.830
10	3 11 25.10	2.1893	18 20 39.3	5.731
11	3 13 36.47	2.1897	18 26 20.2	5.632
12	3 15 47.87	2.1901	18 31 55.2	5.533
13	3 17 59.29	2.1905	18 37 24.2	5.433
14	3 20 10.74	2.1909	18 42 47.2	5.333
15	3 22 22.21	2.1913	18 48 4.2	5.233
16	3 24 33.70	2.1917	18 53 15.2	5.133
17	3 26 45.21	2.1920	18 58 20.2	5.032
18	3 28 56.74	2.1923	19 3 19.1	4.932
19	3 31 8.29	2.1926	19 8 12.0	4.831
20	3 33 19.85	2.1929	19 12 58.8	4.729
21	3 35 31.43	2.1931	19 17 39.5	4.627
22	3 37 43.02	2.1934	19 22 14.1	4.525
23	3 39 54.63	2.1936	N.19 26 42.6	4.423

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 42 6.25	2.1938	N.19 31 4.9	4.321
1	3 44 17.88	2.1939	19 35 21.1	4.218
2	3 46 29.52	2.1940	19 39 31.1	4.116
3	3 48 41.17	2.1941	19 43 35.0	4.013
4	3 50 52.82	2.1942	19 47 32.7	3.910
5	3 53 4.48	2.1943	19 51 24.2	3.807
6	3 55 16.14	2.1944	19 55 9.5	3.703
7	3 57 27.81	2.1944	19 58 48.6	3.599
8	3 59 39.47	2.1944	20 2 21.4	3.496
9	4 1 51.13	2.1943	20 5 48.0	3.392
10	4 4 2.79	2.1942	20 9 8.4	3.288
11	4 6 14.44	2.1941	20 12 22.5	3.183
12	4 8 26.09	2.1940	20 15 30.4	3.079
13	4 10 37.73	2.1939	20 18 32.0	2.974
14	4 12 49.36	2.1937	20 21 27.3	2.870
15	4 15 0.98	2.1935	20 24 16.4	2.766
16	4 17 12.58	2.1933	20 26 59.2	2.661
17	4 19 24.17	2.1930	20 29 35.7	2.557
18	4 21 35.74	2.1927	20 32 6.0	2.452
19	4 23 47.29	2.1923	20 34 30.0	2.347
20	4 25 58.82	2.1920	20 36 47.6	2.242
21	4 28 10.33	2.1916	20 38 59.0	2.137
22	4 30 21.81	2.1912	20 41 4.1	2.032
23	4 32 33.27	2.1907	20 43 2.9	1.927
24	4 34 44.69	2.1902	N.20 44 55.4	1.822

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 34 44.69	2.1902	N.20 44 55.4	1.822
1	4 36 56.08	2.1896	20 46 41.6	1.717
2	4 39 7.44	2.1890	20 48 21.5	1.612
3	4 41 18.76	2.1884	20 49 55.1	1.508
4	4 43 30.05	2.1878	20 51 22.5	1.403
5	4 45 41.30	2.1871	20 52 43.6	1.298
6	4 47 52.50	2.1864	20 53 58.3	1.193
7	4 50 3.66	2.1856	20 55 6.8	1.089
8	4 52 14.77	2.1848	20 56 9.0	0.984
9	4 54 25.84	2.1840	20 57 4.9	0.880
10	4 56 36.85	2.1831	20 57 54.6	0.776
11	4 58 47.81	2.1822	20 58 38.0	0.672
12	5 0 58.71	2.1813	20 59 15.2	0.567
13	5 3 9.56	2.1803	20 59 46.1	0.463
14	5 5 20.35	2.1793	21 0 10.8	0.359
15	5 7 31.08	2.1783	21 0 29.2	0.255
16	5 9 41.74	2.1772	21 0 41.4	0.151
17	5 11 52.34	2.1761	21 0 47.4	0.048
18	5 14 2.87	2.1749	21 0 47.2	0.056
19	5 16 13.33	2.1737	21 0 40.8	0.158
20	5 18 23.71	2.1725	21 0 28.2	0.261
21	5 20 34.02	2.1712	21 0 9.4	0.364
22	5 22 44.25	2.1699	20 59 44.5	0.466
23	5 24 54.41	2.1685	N.20 59 13.5	0.568

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 27 4.48	2.1671	N.20 58 36.3	0.671
1	5 29 14.47	2.1657	20 57 52.9	0.773
2	5 31 24.37	2.1643	20 57 3.5	0.875
3	5 33 34.18	2.1628	20 56 8.0	0.976
4	5 35 43.91	2.1613	20 55 6.4	1.077
5	5 37 53.55	2.1598	20 53 58.7	1.178
6	5 40 3.09	2.1582	20 52 45.0	1.279
7	5 42 12.53	2.1566	20 51 25.3	1.379
8	5 44 21.88	2.1550	20 49 59.5	1.479
9	5 46 31.13	2.1533	20 48 27.7	1.579
10	5 48 40.27	2.1516	20 46 49.9	1.679
11	5 50 49.31	2.1498	20 45 6.2	1.778
12	5 52 58.25	2.1480	20 43 16.5	1.877
13	5 55 7.08	2.1462	20 41 20.9	1.976
14	5 57 15.80	2.1444	20 39 19.4	2.074
15	5 59 24.40	2.1425	20 37 12.0	2.172
16	6 1 32.89	2.1406	20 34 58.7	2.270
17	6 3 41.26	2.1386	20 32 39.6	2.367
18	6 5 49.52	2.1366	20 30 14.6	2.464
19	6 7 57.66	2.1346	20 27 43.9	2.560
20	6 10 5.67	2.1326	20 25 7.4	2.656
21	6 12 13.56	2.1305	20 22 25.2	2.752
22	6 14 21.33	2.1284	20 19 37.2	2.847
23	6 16 28.97	2.1263	20 16 43.5	2.942
24	6 18 36.49	2.1242	N.20 13 44.1	3.037

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 18 36.49	2.1242	N.20 13 44.1	3.037
1	6 20 43.88	2.1220	20 10 39.1	3.131
2	6 22 51.13	2.1198	20 7 28.4	3.225
3	6 24 58.25	2.1176	20 4 12.1	3.318
4	6 27 5.24	2.1154	20 0 50.2	3.411
5	6 29 12.10	2.1131	19 57 22.8	3.503
6	6 31 18.81	2.1108	19 53 49.8	3.595
7	6 33 25.38	2.1084	19 50 11.4	3.686
8	6 35 31.82	2.1061	19 46 27.5	3.777
9	6 37 38.12	2.1037	19 42 38.2	3.867
10	6 39 44.27	2.1013	19 38 43.4	3.957
11	6 41 50.28	2.0989	19 34 43.2	4.047
12	6 43 56.14	2.0965	19 30 37.7	4.136
13	6 46 1.86	2.0941	19 26 26.9	4.225
14	6 48 7.43	2.0916	19 22 10.7	4.313
15	6 50 12.85	2.0891	19 17 49.3	4.401
16	6 52 18.12	2.0866	19 13 22.6	4.488
17	6 54 23.24	2.0841	19 8 50.7	4.575
18	6 56 28.21	2.0816	19 4 13.6	4.661
19	6 58 33.03	2.0791	18 59 31.4	4.747
20	7 0 37.70	2.0765	18 54 44.0	4.832
21	7 2 42.21	2.0739	18 49 51.5	4.917
22	7 4 46.57	2.0713	18 44 54.0	5.001
23	7 6 50.77	2.0687	N.18 39 51.5	5.084

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 8 54.82	2.0661	N.18 34 44.0	5.167
1	7 10 58.71	2.0635	18 29 31.5	5.249
2	7 13 2.44	2.0609	18 24 14.1	5.331
3	7 15 6.01	2.0583	18 18 51.8	5.412
4	7 17 9.43	2.0556	18 13 24.7	5.492
5	7 19 12.69	2.0529	18 7 52.8	5.572
6	7 21 15.78	2.0502	18 2 16.0	5.652
7	7 23 18.71	2.0475	17 56 34.5	5.731
8	7 25 21.48	2.0449	17 50 48.3	5.809
9	7 27 24.09	2.0422	17 44 57.4	5.887
10	7 29 26.54	2.0395	17 39 1.8	5.964
11	7 31 28.83	2.0368	17 33 1.6	6.041
12	7 33 30.95	2.0341	17 26 56.9	6.117
13	7 35 32.91	2.0313	17 20 47.6	6.192
14	7 37 34.71	2.0286	17 14 33.8	6.267
15	7 39 36.35	2.0259	17 8 15.5	6.342
16	7 41 37.83	2.0232	17 1 52.8	6.416
17	7 43 39.14	2.0205	16 55 25.7	6.488
18	7 45 40.29	2.0178	16 48 54.2	6.560
19	7 47 41.28	2.0151	16 42 18.4	6.632
20	7 49 42.11	2.0124	16 35 38.3	6.703
21	7 51 42.78	2.0097	16 28 53.9	6.774
22	7 53 43.28	2.0070	16 22 5.3	6.844
23	7 55 43.62	2.0044	16 15 12.6	6.913
24	7 57 43.81	2.0017	N.16 8 15.7	6.982

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 57 43.81	2.0017	N.16 8 15.7	6.982
1	7 59 43.83	1.9990	16 1 14.7	7.051
2	8 1 43.69	1.9963	15 54 9.6	7.119
3	8 3 43.39	1.9937	15 47 0.5	7.186
4	8 5 42.94	1.9910	15 39 47.4	7.251
5	8 7 42.33	1.9884	15 32 30.4	7.317
6	8 9 41.55	1.9857	15 25 9.4	7.382
7	8 11 40.62	1.9831	15 17 44.5	7.447
8	8 13 39.53	1.9805	15 10 15.8	7.511
9	8 15 38.28	1.9779	15 2 43.3	7.573
10	8 17 36.88	1.9753	14 55 7.0	7.635
11	8 19 35.32	1.9727	14 47 27.0	7.697
12	8 21 33.61	1.9701	14 39 43.4	7.758
13	8 23 31.75	1.9676	14 31 56.1	7.818
14	8 25 29.73	1.9650	14 24 5.2	7.878
15	8 27 27.56	1.9625	14 16 10.7	7.938
16	8 29 25.24	1.9600	14 8 12.6	7.997
17	8 31 22.77	1.9575	14 0 11.0	8.055
18	8 33 20.15	1.9551	13 52 6.0	8.112
19	8 35 17.39	1.9527	13 43 57.6	8.169
20	8 37 14.48	1.9503	13 35 45.7	8.225
21	8 39 11.43	1.9479	13 27 30.5	8.280
22	8 41 8.23	1.9455	13 19 12.0	8.335
23	8 43 4.89	1.9432	N.13 10 50.3	8.389

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 45 1.41	1.9408	N.13 2 25.3	8.443
1	8 46 57.79	1.9385	12 53 57.1	8.496
2	8 48 54.03	1.9362	12 45 25.8	8.548
3	8 50 50.13	1.9339	12 36 51.4	8.600
4	8 52 46.10	1.9316	12 28 13.8	8.651
5	8 54 41.93	1.9294	12 19 33.2	8.701
6	8 56 37.63	1.9272	12 10 49.7	8.750
7	8 58 33.20	1.9250	12 2 3.2	8.799
8	9 0 28.64	1.9228	11 53 13.8	8.847
9	9 2 23.94	1.9207	11 44 21.5	8.895
10	9 4 19.11	1.9186	11 35 26.4	8.942
11	9 6 14.16	1.9165	11 26 28.5	8.989
12	9 8 9.09	1.9144	11 17 27.7	9.035
13	9 10 3.90	1.9124	11 8 24.2	9.080
14	9 11 58.58	1.9104	10 59 18.1	9.124
15	9 13 53.14	1.9084	10 50 9.3	9.168
16	9 15 47.59	1.9065	10 40 57.9	9.211
17	9 17 41.92	1.9046	10 31 43.9	9.254
18	9 19 36.14	1.9027	10 22 27.4	9.296
19	9 21 30.25	1.9009	10 13 8.4	9.337
20	9 23 24.25	1.8991	10 3 47.0	9.378
21	9 25 18.14	1.8973	9 54 23.1	9.418
22	9 27 11.93	1.8955	9 44 56.8	9.457
23	9 29 5.61	1.8938	9 35 28.2	9.496
24	9 30 59.19	1.8921	N. 9 25 57.3	9.534

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 25.					WEDNESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 30 59.19	1.8921	N. 9 25 57.3	9.534	0	11 0 35.33	1.8574	N. 1 16 16.5	10.631
1	9 32 52.67	1.8905	9 16 24.1	9.572	1	11 2 26.79	1.8578	1 5 38.4	10.639
2	9 34 46.05	1.8889	9 6 48.7	9.609	2	11 4 18.27	1.8582	0 54 59.8	10.646
3	9 36 39.33	1.8873	8 57 11.1	9.646	3	11 6 9.78	1.8587	0 44 20.8	10.652
4	9 38 32.52	1.8857	8 47 31.3	9.681	4	11 8 1.32	1.8592	0 33 41.5	10.658
5	9 40 25.61	1.8842	8 37 49.4	9.716	5	11 9 52.89	1.8598	0 23 1.9	10.663
6	9 42 18.62	1.8827	8 28 5.4	9.750	6	11 11 44.49	1.8604	0 12 21.9	10.668
7	9 44 11.54	1.8813	8 18 19.4	9.783	7	11 13 36.13	1.8611	N. 0 1 41.6	10.672
8	9 46 4.38	1.8799	8 8 31.4	9.816	8	11 15 27.82	1.8618	S. 0 8 58.8	10.675
9	9 47 57.14	1.8786	7 58 41.4	9.849	9	11 17 19.55	1.8625	0 19 39.4	10.678
10	9 49 49.81	1.8772	7 48 49.5	9.881	10	11 19 11.32	1.8633	0 30 20.2	10.680
11	9 51 42.40	1.8759	7 38 55.7	9.912	11	11 21 3.14	1.8642	0 41 1.1	10.682
12	9 53 34.92	1.8746	7 29 0.1	9.942	12	11 22 55.03	1.8651	0 51 42.1	10.683
13	9 55 27.36	1.8734	7 19 2.6	9.972	13	11 24 46.97	1.8661	1 2 23.1	10.683
14	9 57 19.73	1.8723	7 9 3.4	10.001	14	11 26 38.96	1.8672	1 13 4.1	10.683
15	9 59 12.04	1.8712	6 59 2.5	10.030	15	11 28 31.02	1.8683	1 23 45.1	10.682
16	10 1 4.27	1.8701	6 48 59.8	10.058	16	11 30 23.15	1.8694	1 34 26.0	10.680
17	10 2 56.44	1.8690	6 38 55.5	10.086	17	11 32 15.34	1.8705	1 45 6.8	10.678
18	10 4 48.55	1.8679	6 28 49.5	10.113	18	11 34 7.61	1.8717	1 55 47.4	10.675
19	10 6 40.59	1.8669	6 18 41.9	10.139	19	11 35 59.95	1.8730	2 6 27.9	10.672
20	10 8 32.58	1.8660	6 8 32.8	10.165	20	11 37 52.37	1.8743	2 17 8.1	10.668
21	10 10 24.51	1.8651	5 58 22.2	10.190	21	11 39 44.87	1.8757	2 27 48.0	10.663
22	10 12 16.39	1.8642	5 48 10.0	10.214	22	11 41 37.46	1.8771	2 38 27.6	10.658
23	10 14 8.22	1.8634	N. 5 37 56.4	10.238	23	11 43 30.13	1.8786	S. 2 49 6.9	10.652
	TUESDAY 26.					THURSDAY 28.			
0	10 16 0.00	1.8626	N. 5 27 41.5	10.261	0	11 45 22.89	1.8802	S. 2 59 45.9	10.645
1	10 17 51.74	1.8619	5 17 25.2	10.283	1	11 47 15.75	1.8818	3 10 24.4	10.637
2	10 19 43.43	1.8612	5 7 7.5	10.305	2	11 49 8.70	1.8834	3 21 2.4	10.629
3	10 21 35.09	1.8606	4 56 48.5	10.327	3	11 51 1.75	1.8851	3 31 39.9	10.621
4	10 23 26.70	1.8600	4 46 28.3	10.348	4	11 52 54.91	1.8868	3 42 17.0	10.612
5	10 25 18.28	1.8594	4 36 6.9	10.368	5	11 54 48.17	1.8886	3 52 53.5	10.602
6	10 27 9.83	1.8589	4 25 44.2	10.387	6	11 56 41.54	1.8905	4 3 29.3	10.591
7	10 29 1.35	1.8585	4 15 20.4	10.406	7	11 58 35.03	1.8924	4 14 4.4	10.580
8	10 30 52.85	1.8581	4 4 55.5	10.424	8	12 0 28.63	1.8943	4 24 38.9	10.568
9	10 32 44.32	1.8577	3 54 29.5	10.441	9	12 2 22.35	1.8963	4 35 12.7	10.556
10	10 34 35.77	1.8573	3 44 2.5	10.458	10	12 4 16.19	1.8984	4 45 45.6	10.542
11	10 36 27.20	1.8570	3 33 34.5	10.474	11	12 6 10.16	1.9005	4 56 17.7	10.528
12	10 38 18.61	1.8568	3 23 5.6	10.490	12	12 8 4.26	1.9027	5 6 49.0	10.514
13	10 40 10.01	1.8566	3 12 35.8	10.505	13	12 9 58.49	1.9049	5 17 19.4	10.499
14	10 42 1.40	1.8564	3 2 5.0	10.520	14	12 11 52.85	1.9072	5 27 48.9	10.483
15	10 43 52.78	1.8563	2 51 33.4	10.534	15	12 13 47.35	1.9096	5 38 17.4	10.466
16	10 45 44.16	1.8562	2 41 0.9	10.547	16	12 15 42.00	1.9120	5 48 44.8	10.449
17	10 47 35.53	1.8562	2 30 27.7	10.560	17	12 17 36.79	1.9144	5 59 11.2	10.431
18	10 49 26.91	1.8562	2 19 53.7	10.572	18	12 19 31.73	1.9169	6 9 36.5	10.412
19	10 51 18.29	1.8563	2 9 19.0	10.583	19	12 21 26.82	1.9194	6 20 0.6	10.393
20	10 53 9.67	1.8564	1 58 43.7	10.594	20	12 23 22.06	1.9220	6 30 23.6	10.373
21	10 55 1.06	1.8566	1 48 7.7	10.604	21	12 25 17.46	1.9246	6 40 45.3	10.352
22	10 56 52.47	1.8568	1 37 31.2	10.614	22	12 27 13.02	1.9273	6 51 5.8	10.330
23	10 58 43.89	1.8571	1 26 54.1	10.623	23	12 29 8.75	1.9301	7 1 25.0	10.308
24	11 0 35.33	1.8574	N. 1 16 16.5	10.631	24	12 31 4.64	1.9329	S. 7 11 42.8	10.285

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 31 4.64	1.9329	S. 7 11 42.8	10.285
1	12 33 0.70	1.9358	7 21 59.2	10.262
2	12 34 56.94	1.9387	7 32 14.2	10.238
3	12 36 53.36	1.9417	7 42 27.7	10.213
4	12 38 49.95	1.9447	7 52 39.7	10.187
5	12 40 46.72	1.9478	8 2 50.1	10.160
6	12 42 43.69	1.9509	8 12 58.9	10.132
7	12 44 40.85	1.9541	8 23 6.0	10.104
8	12 46 38.19	1.9574	8 33 11.4	10.075
9	12 48 35.73	1.9609	8 43 15.0	10.046
10	12 50 33.48	1.9640	8 53 16.9	10.016
11	12 52 31.42	1.9674	9 3 16.9	9.985
12	12 54 29.57	1.9708	9 13 15.1	9.953
13	12 56 27.93	1.9744	9 23 11.4	9.921
14	12 58 26.50	1.9780	9 33 5.6	9.888
15	13 0 25.28	1.9816	9 42 57.8	9.853
16	13 2 24.29	1.9853	9 52 47.9	9.818
17	13 4 23.52	1.9890	10 2 35.9	9.782
18	13 6 22.97	1.9927	10 12 21.8	9.745
19	13 8 22.64	1.9965	10 22 5.5	9.708
20	13 10 22.55	2.0003	10 31 46.8	9.670
21	13 12 22.69	2.0042	10 41 25.8	9.631
22	13 14 23.06	2.0082	10 51 2.5	9.591
23	13 16 23.67	2.0122	S. 11 0 36.8	9.551

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 18 24.53	2.0163	S. 11 10 8.6	9.509
1	13 20 25.63	2.0204	11 19 37.9	9.467
2	13 22 26.98	2.0245	11 29 4.6	9.424
3	13 24 28.58	2.0287	11 38 28.7	9.380
4	13 26 30.43	2.0330	11 47 50.2	9.335
5	13 28 32.54	2.0373	11 57 8.9	9.289
6	13 30 34.91	2.0417	12 6 24.9	9.243
7	13 32 37.54	2.0461	12 15 38.1	9.196
8	13 34 40.44	2.0505	12 24 48.4	9.147
9	13 36 43.60	2.0550	12 33 55.8	9.098
10	13 38 47.04	2.0596	12 43 0.2	9.048
11	13 40 50.75	2.0642	12 52 1.6	8.998
12	13 42 54.74	2.0688	13 0 59.9	8.946
13	13 44 59.00	2.0734	13 9 55.1	8.893
14	13 47 3.55	2.0781	13 18 47.1	8.839
15	13 49 8.38	2.0828	13 27 35.9	8.785
16	13 51 13.49	2.0876	13 36 21.3	8.730
17	13 53 18.89	2.0925	13 45 3.3	8.673
18	13 55 24.59	2.0974	13 53 42.0	8.616
19	13 57 30.58	2.1023	14 2 17.2	8.558
20	13 59 36.86	2.1672	14 10 48.9	8.499
21	14 1 43.44	2.1122	14 19 17.0	8.438
22	14 3 50.32	2.1172	14 27 41.4	8.376
23	14 5 57.50	2.1223	14 36 2.1	8.314
24	14 8 4.99	2.1274	S. 14 44 19.1	8.251

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 8 4.99	2.1274	S. 14 44 19.1	8.251
1	14 10 12.79	2.1325	14 52 32.3	8.188
2	14 12 20.89	2.1377	15 0 41.6	8.123
3	14 14 29.31	2.1429	15 8 47.0	8.057
4	14 16 38.04	2.1481	15 16 48.4	7.990
5	14 18 47.09	2.1534	15 24 45.8	7.922
6	14 20 56.45	2.1587	15 32 39.0	7.853
7	14 23 6.13	2.1640	15 40 28.0	7.783
8	14 25 16.13	2.1693	15 48 12.9	7.712
9	14 27 26.45	2.1747	15 55 53.5	7.640
10	14 29 37.10	2.1801	16 3 29.7	7.567
11	14 31 48.07	2.1855	16 11 1.5	7.493
12	14 33 59.36	2.1909	16 18 28.8	7.418
13	14 36 10.98	2.1964	16 25 51.6	7.342
14	14 38 22.93	2.2019	16 33 9.8	7.265
15	14 40 35.21	2.2075	16 40 23.3	7.187
16	14 42 47.83	2.2130	16 47 32.2	7.108
17	14 45 0.78	2.2186	16 54 36.3	7.027
18	14 47 14.06	2.2242	17 1 35.5	6.945
19	14 49 27.68	2.2298	17 8 29.8	6.863
20	14 51 41.64	2.2354	17 15 19.1	6.780
21	14 53 55.94	2.2411	17 22 3.4	6.696
22	14 56 10.57	2.2467	17 28 42.6	6.611
23	14 58 25.54	2.2524	S. 17 35 16.7	6.524

MONDAY, FEBRUARY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 0 40.85	2.2580	S. 17 41 45.5	6.436

PHASES OF THE MOON.

	d	h	m
☾ Last Quarter, . .	1	19	39.2
● New Moon, . .	8	19	45.6
☽ First Quarter, . .	15	11	6.0
○ Full Moon, . . .	23	10	2.3
☾ Last Quarter, . .	31	12	17.5

	d	h
☾ Perigee, ...	9	14.0
☾ Apogee, ...	24	9.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Pollux	W.	70° 31′ 2″	3019	72° 0′ 51″	3006	73° 30′ 56″	2993	75° 1′ 18″	2980
	Regulus	W.	33 29 55	2998	35 0 10	2981	36 30 46	2965	38 1 42	2950
	Jupiter	E.	49 35 28	2997	48 5 11	2985	46 34 40	2973	45 3 54	2961
	Venus	E.	54 17 53	3358	52 54 48	3345	51 31 29	3332	50 7 55	3319
	Antares	E.	66 30 5	2956	64 58 57	2945	63 27 35	2934	61 55 59	2922
	Mars	E.	69 51 49	3192	68 25 30	3179	66 58 56	3167	65 32 7	3154
	Sun	E.	99 13 58	3319	97 50 8	3306	96 26 3	3292	95 1 42	3279
2	Pollux	W.	82 37 29	2907	84 9 39	2892	85 42 8	2876	87 14 57	2860
	Regulus	W.	45 41 30	2867	47 14 31	2851	48 47 53	2834	50 21 37	2817
	Jupiter	E.	37 25 57	2893	35 53 29	2877	34 20 41	2862	32 47 34	2847
	Venus	E.	43 6 4	3247	41 40 50	3231	40 15 18	3214	38 49 26	3198
	Antares	E.	54 14 7	2859	52 40 55	2845	51 7 26	2832	49 33 40	2818
	Mars	E.	58 13 57	3082	56 45 25	3067	55 16 35	3051	53 47 25	3034
	Sun	E.	87 55 53	3205	86 29 50	3189	85 3 28	3173	83 36 46	3156
3	Pollux	W.	95 4 14	2779	96 39 10	2761	98 14 29	2744	99 50 10	2728
	Regulus	W.	58 15 59	2728	59 52 2	2709	61 28 30	2691	63 5 22	2672
	Antares	E.	41 40 10	2747	40 4 32	2732	38 28 35	2719	36 52 20	2705
	Mars	E.	46 16 24	2947	44 45 5	2930	43 13 24	2911	41 41 19	2893
	Sun	E.	76 18 5	3067	74 49 15	3048	73 20 2	3029	71 50 25	3010
4	Regulus	W.	71 16 9	2576	72 55 37	2567	74 35 31	2538	76 15 52	2517
	Saturn	W.	21 56 57	2715	23 33 17	2677	25 10 28	2642	26 48 26	2610
	Mars	E.	33 54 52	2796	32 20 19	2777	30 45 21	2758	29 9 58	2738
	Sun	E.	64 16 17	2911	62 44 12	2891	61 11 41	2870	59 38 44	2851
5	Regulus	W.	84 44 29	2420	86 27 35	2401	88 11 8	2382	89 55 8	2364
	Saturn	W.	35 8 27	2474	36 50 17	2450	38 32 40	2427	40 15 36	2404
	Spica	W.	30 46 32	2401	32 30 5	2382	34 14 5	2363	35 58 33	2344
	Sun	E.	51 47 29	2750	50 11 55	2730	48 35 55	2710	46 59 29	2691
6	Regulus	W.	98 41 52	2272	100 28 32	2256	102 15 37	2239	104 3 6	2223
	Saturn	W.	48 58 10	2300	50 44 10	2280	52 30 39	2261	54 17 36	2243
	Spica	W.	44 47 41	2252	46 34 51	2235	48 22 26	2218	50 10 27	2202
	Sun	E.	38 51 0	2601	37 12 6	2585	35 32 50	2569	33 53 12	2554
11	Sun	W.	31 16 56	2378	33 1 3	2384	34 45 1	2392	36 28 47	2401
	α Arietis	E.	73 39 30	2082	71 48 3	2092	69 56 52	2103	68 5 58	2115
	Aldebaran	E.	106 45 25	2048	104 53 5	2057	103 0 59	2066	101 9 8	2076
12	Sun	W.	45 4 8	2457	46 46 22	2470	48 28 18	2484	50 9 54	2499
	α Arietis	E.	58 56 17	2184	57 7 26	2201	55 19 0	2218	53 30 59	2235
	Aldebaran	E.	91 54 6	2136	90 4 2	2149	88 14 18	2163	86 24 55	2177
13	Sun	W.	58 32 39	2577	60 12 6	2593	61 51 10	2610	63 29 51	2627
	Aldebaran	E.	77 23 32	2254	75 36 25	2270	73 49 42	2286	72 3 22	2303
	Pollux	E.	119 20 11	2342	117 35 12	2355	115 50 32	2368	114 6 12	2382
14	Sun	W.	71 37 23	2716	73 13 42	2733	74 49 38	2751	76 25 10	2769
	Aldebaran	E.	63 17 51	2388	61 33 59	2405	59 50 31	2422	58 7 28	2439
	Pollux	E.	105 29 35	2455	103 47 19	2470	102 5 24	2487	100 23 52	2502
15	Sun	W.	84 16 58	2858	85 50 11	2876	87 23 1	2893	88 55 29	2909
	Fomalhaut	W.	51 58 45	3304	53 22 52	3285	54 47 21	3270	56 12 8	3256

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Pollux	W.	76° 31′ 56″	2965	78° 2′ 52″	2951	79° 34′ 6″	2937	81° 5′ 38″	2922
	Regulus	W.	39 32 58	2933	41 4 35	2917	42 36 32	2901	44 8 50	2883
	Jupiter	E.	43 32 52	2948	42 1 34	2935	40 29 59	2921	38 58 7	2907
	Venus	E.	48 44 6	3306	47 20 1	3291	45 55 39	3276	44 31 0	3262
	Antares	E.	60 24 8	2910	58 52 2	2898	57 19 40	2885	55 47 2	2872
	Mars	E.	64 5 3	3140	62 37 42	3127	61 10 5	3112	59 42 10	3097
	Sun	E.	93 37 6	3266	92 12 13	3251	90 47 4	3236	89 21 37	3221
2	Pollux	W.	88 48 7	2845	90 21 37	2828	91 55 28	2812	93 29 40	2796
	Regulus	W.	51 55 43	2799	53 30 12	2782	55 5 4	2763	56 40 20	2746
	Jupiter	E.	31 14 7	2831	29 40 20	2815	28 6 12	2799	26 31 43	2783
	Venus	E.	37 23 15	3182	35 56 44	3164	34 29 52	3148	33 2 40	3130
	Antares	E.	47 59 35	2804	46 25 12	2789	44 50 30	2775	43 15 29	2761
	Mars	E.	52 17 55	3018	50 48 5	3001	49 17 53	2984	47 47 20	2965
	Sun	E.	82 9 44	3139	80 42 22	3121	79 14 38	3104	77 46 33	3085
3	Pollux	W.	101 26 13	2710	103 2 39	2693	104 39 29	2675	106 16 42	2657
	Regulus	W.	64 42 40	2652	66 20 24	2634	67 58 33	2615	69 37 8	2596
	Antares	E.	35 15 47	2692	33 38 57	2679	32 1 49	2666	30 24 24	2655
	Mars	E.	40 8 51	2878	38 35 58	2855	37 2 41	2835	35 28 59	2816
	Sun	E.	70 20 25	2990	68 50 0	2971	67 19 11	2951	65 47 57	2931
4	Regulus	W.	77 56 41	2498	79 37 57	2479	81 19 40	2459	83 1 51	2440
	Saturn	W.	28 27 8	2580	30 6 31	2551	31 46 33	2525	33 27 12	2499
	Mars	E.	27 34 9	2719	25 57 55	2701	24 21 16	2681	22 44 11	2662
	Sun	E.	58 5 22	2830	56 31 33	2810	54 57 18	2790	53 22 37	2769
5	Regulus	W.	91 39 35	2345	93 24 29	2326	95 9 50	2308	96 55 38	2290
	Saturn	W.	41 59 5	2382	43 43 5	2360	45 27 37	2339	47 12 39	2320
	Spica	W.	37 43 29	2325	39 28 52	2307	41 14 41	2288	43 0 58	2270
	Sun	E.	45 22 37	2672	43 45 19	2654	42 7 37	2635	40 29 30	2618
6	Regulus	W.	105 51 0	2207	107 39 17	2191	109 27 58	2176	111 17 1	2162
	Saturn	W.	56 4 59	2226	57 52 49	2209	59 41 4	2192	61 29 44	2176
	Spica	W.	51 58 52	2185	53 47 42	2169	55 36 56	2154	57 26 33	2138
	Sun	E.	32 13 14	2540	30 32 57	2527	28 52 21	2515	27 11 29	2506
11	Sun	W.	38 12 21	2410	39 55 41	2421	41 38 46	2432	43 21 35	2443
	a Arietis	E.	66 15 21	2128	64 25 4	2141	62 35 7	2155	60 45 31	2169
	Aldebaran	E.	99 17 32	2087	97 26 13	2099	95 35 12	2111	93 44 30	2123
12	Sun	W.	51 51 9	2513	53 32 4	2529	55 12 37	2544	56 52 49	2560
	a Arietis	E.	51 43 23	2253	49 56 14	2272	48 9 34	2293	46 23 23	2313
	Aldebaran	E.	84 35 53	2192	82 47 13	2207	80 58 56	2223	79 11 2	2239
13	Sun	W.	65 8 9	2645	66 46 3	2663	68 23 33	2680	70 0 40	2698
	Aldebaran	E.	70 17 27	2320	68 31 56	2337	66 46 50	2353	65 2 8	2371
	Pollux	E.	112 22 12	2396	110 38 32	2410	108 55 12	2425	107 12 13	2440
14	Sun	W.	78 0 18	2787	79 35 3	2805	81 9 24	2823	82 43 22	2843
	Aldebaran	E.	56 24 49	2457	54 42 35	2475	53 0 46	2492	51 19 21	2509
	Pollux	E.	98 42 42	2518	97 1 54	2534	95 21 28	2550	93 41 24	2566
15	Sun	W.	90 27 36	2927	91 59 21	2944	93 30 44	2960	95 1 47	2977
	Fomalhaut	W.	57 37 9	3247	59 2 22	3240	60 27 44	3234	61 53 13	3229

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Aldebaran	E.	49° 38′ 20″	2526	47° 57′ 43″	2543	46° 17′ 30″	2561	44° 37′ 42″	2578
	Pollux	E.	92 1 42	2583	90 22 23	2599	88 43 26	2615	87 4 51	2630
16	Sun	W.	96 32 29	2993	98 2 51	3009	99 32 53	3024	101 2 36	3040
	Fomalhaut	W.	63 18 48	3226	64 44 26	3225	66 10 5	3225	67 35 44	3226
	a Pegasi	W.	43 21 7	2942	44 52 33	2939	46 24 3	2938	47 55 34	2937
	Pollux	E.	78 57 17	2710	77 20 50	2725	75 44 43	2741	74 8 57	2756
	Regulus	E.	115 40 43	2652	114 3 0	2666	112 25 35	2680	110 48 28	2694
17	Sun	W.	108 26 28	3114	109 54 21	3128	111 21 57	3141	112 49 17	3154
	Fomalhaut	W.	74 43 24	3243	76 8 42	3249	77 33 53	3255	78 58 57	3261
	a Pegasi	W.	55 32 45	2952	57 3 58	2958	58 35 4	2962	60 6 4	2968
	Pollux	E.	66 15 12	2832	64 41 26	2848	63 8 0	2862	61 34 52	2877
	Regulus	E.	102 47 22	2758	101 11 59	2771	99 36 53	2783	98 2 3	2795
18	Sun	W.	120 2 2	3217	121 27 51	3230	122 53 25	3241	124 18 46	3253
	Fomalhaut	W.	86 2 12	3301	87 26 22	3310	88 50 22	3319	90 14 11	3329
	a Pegasi	W.	67 39 11	3000	69 9 24	3006	70 39 29	3014	72 9 25	3020
	Pollux	E.	53 54 3	2953	52 22 51	2969	50 51 59	2985	49 21 27	3001
	Regulus	E.	90 11 34	2849	88 38 10	2860	87 5 0	2870	85 32 3	2880
19	Fomalhaut	W.	97 10 19	3384	98 32 54	3395	99 55 16	3408	101 17 24	3421
	a Pegasi	W.	79 36 58	3055	81 6 3	3062	82 34 59	3069	84 3 47	3076
	a Arietis	W.	35 59 22	3030	37 28 57	3030	38 58 33	3030	40 28 9	3030
	Pollux	E.	41 53 57	3089	40 25 34	3110	38 57 36	3130	37 30 3	3153
	Regulus	E.	77 50 17	2925	76 18 30	2933	74 46 53	2942	73 15 27	2950
20	a Pegasi	W.	91 25 43	3109	92 53 42	3116	94 21 32	3123	95 49 14	3129
	a Arietis	W.	47 55 40	3041	49 25 2	3044	50 54 20	3047	52 23 35	3049
	Regulus	E.	65 40 42	2986	64 10 12	2993	62 39 50	3000	61 9 37	3006
	Saturn	E.	115 47 0	2991	114 16 36	2997	112 46 19	3002	111 16 9	3008
	Spica	E.	119 29 58	2962	117 58 58	2968	116 28 5	2974	114 57 20	2980
21	a Pegasi	W.	103 5 48	3162	104 32 43	3169	105 59 29	3176	107 26 7	3183
	a Arietis	W.	59 48 57	3065	61 17 50	3067	62 46 40	3070	64 15 26	3073
	Aldebaran	W.	26 29 53	3067	27 58 43	3066	29 27 34	3065	30 56 26	3065
	Regulus	E.	53 40 29	3037	52 11 2	3043	50 41 42	3048	49 12 29	3055
	Saturn	E.	103 46 53	3031	102 17 19	3035	100 47 50	3039	99 18 26	3043
	Spica	E.	107 25 18	3005	105 55 12	3010	104 25 12	3014	102 55 17	3019
22	a Arietis	W.	71 38 25	3087	73 6 51	3089	74 35 14	3091	76 3 34	3093
	Aldebaran	W.	38 20 39	3069	39 49 26	3070	41 18 12	3072	42 46 56	3073
	Regulus	E.	41 48 14	3084	40 19 45	3090	38 51 23	3096	37 23 8	3103
	Saturn	E.	91 52 36	3061	90 23 39	3064	88 54 45	3067	87 25 55	3070
	Spica	E.	95 26 59	3038	93 57 33	3040	92 28 10	3044	90 58 52	3047
23	a Arietis	W.	83 24 35	3104	84 52 40	3106	86 20 42	3107	87 48 43	3110
	Aldebaran	W.	50 10 12	3079	51 38 47	3081	53 7 20	3082	54 35 52	3083
	Saturn	E.	80 2 36	3082	78 34 5	3085	77 5 37	3087	75 37 11	3089
	Spica	E.	83 33 9	3059	82 4 9	3061	80 35 12	3062	79 6 17	3065
	Jupiter	E.	115 42 0	3110	114 14 2	3111	112 46 6	3114	111 18 13	3115
24	a Arietis	W.	95 8 17	3116	96 36 7	3117	98 3 56	3118	99 31 44	3119
	Aldebaran	W.	61 58 14	3087	63 26 40	3087	64 55 6	3087	66 23 32	3087
	Saturn	E.	68 15 34	3096	66 47 20	3098	65 19 8	3099	63 50 57	3100

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	Aldebaran	E.	42° 58′ 17″	2596	41° 19′ 16″	2613	39° 40′ 39″	2631	38° 2′ 26″	2648
	Pollux	E.	85 26 37	2646	83 48 45	2662	82 11 14	2678	80 34 5	2694
16	Sun	W.	102 31 59	3055	104 1 4	3070	105 29 50	3086	106 58 18	3100
	Fomalhaut	W.	69 1 22	3228	70 26 58	3231	71 52 31	3234	73 18 0	3238
	a Pegasi	W.	49 27 6	2939	50 58 36	2941	52 30 3	2944	54 1 26	2947
	Pollux	E.	72 33 32	2772	70 58 27	2787	69 23 42	2802	67 49 17	2818
	Regulus	E.	109 11 40	2707	107 35 10	2720	105 58 57	2733	104 23 1	2746
17	Sun	W.	114 16 21	3168	115 43 9	3180	117 9 42	3193	118 35 59	3205
	Fomalhaut	W.	80 23 54	3269	81 48 42	3276	83 13 22	3284	84 37 52	3293
	a Pegasi	W.	61 36 57	2974	63 7 42	2980	64 38 20	2986	66 8 50	2993
	Pollux	E.	60 2 4	2892	58 29 35	2907	56 57 25	2922	55 25 34	2938
	Regulus	E.	96 27 28	2806	94 53 8	2817	93 19 2	2828	91 45 11	2839
18	Sun	W.	125 43 53	3264	127 8 47	3274	128 33 29	3284	129 57 59	3294
	Fomalhaut	W.	91 37 49	3339	93 1 15	3350	94 24 29	3361	95 47 30	3372
	a Pegasi	W.	73 39 13	3027	75 8 52	3034	76 38 23	3041	78 7 45	3048
	Pollux	E.	47 51 15	3017	46 21 23	3034	44 51 52	3052	43 22 43	3070
	Regulus	E.	83 59 18	2889	82 26 45	2898	80 54 24	2908	79 22 15	2916
19	Fomalhaut	W.	102 39 17	3433	104 0 56	3447	105 22 19	3462	106 43 26	3477
	a Pegasi	W.	85 32 26	3082	87 0 58	3089	88 29 21	3096	89 57 36	3102
	a Arietis	W.	41 57 44	3032	43 27 17	3034	44 56 47	3036	46 26 15	3039
	Pollux	E.	36 2 57	3177	34 36 20	3203	33 10 14	3232	31 44 43	3268
	Regulus	E.	71 44 11	2958	70 13 5	2965	68 42 8	2973	67 11 21	2979
20	a Pegasi	W.	97 16 49	3135	98 44 16	3142	100 11 35	3148	101 38 46	3156
	a Arietis	W.	53 52 47	3052	55 21 55	3056	56 50 59	3058	58 20 0	3061
	Regulus	E.	59 39 32	3013	58 9 35	3018	56 39 45	3025	55 10 3	3031
	Saturn	E.	109 46 6	3013	108 16 9	3018	106 46 18	3022	105 16 33	3026
	Spica	E.	113 26 42	2985	111 56 11	2991	110 25 47	2996	108 55 29	3001
21	a Pegasi	W.	108 52 37	3190	110 18 58	3197	111 45 11	3204	113 11 15	3211
	a Arietis	W.	65 44 9	3076	67 12 48	3078	68 41 24	3082	70 9 56	3084
	Aldebaran	W.	32 25 18	3066	33 54 9	3066	35 23 0	3067	36 51 50	3068
	Regulus	E.	47 43 24	3060	46 14 26	3066	44 45 35	3072	43 16 51	3078
	Saturn	E.	97 49 7	3047	96 19 53	3051	94 50 43	3054	93 21 37	3058
	Spica	E.	101 25 28	3023	99 55 44	3026	98 26 4	3030	96 56 29	3034
22	a Arietis	W.	77 31 52	3096	79 0 7	3098	80 28 19	3101	81 56 28	3102
	Aldebaran	W.	44 15 39	3074	45 44 20	3076	47 12 59	3078	48 41 36	3078
	Regulus	E.	35 55 2	3110	34 27 4	3117	32 59 15	3125	31 31 36	3133
	Saturn	E.	85 57 9	3073	84 28 26	3075	82 59 46	3078	81 31 9	3081
	Spica	E.	89 29 37	3049	88 0 25	3052	86 31 17	3055	85 2 12	3056
23	a Arietis	W.	89 16 41	3111	90 44 37	3112	92 12 32	3114	93 40 25	3114
	Aldebaran	W.	56 4 22	3084	57 32 51	3084	59 1 20	3086	60 29 47	3086
	Saturn	E.	74 8 48	3091	72 40 27	3092	71 12 8	3093	69 43 50	3095
	Spica	E.	77 37 24	3066	76 8 33	3067	74 39 43	3069	73 10 55	3070
	Jupiter	E	109 50 22	3117	108 22 33	3118	106 54 45	3119	105 26 58	3120
24	a Arietis	W.	100 59 30	3120	102 27 15	3120	103 55 0	3121	105 22 44	3121
	Aldebaran	W.	67 51 58	3087	69 20 24	3087	70 48 50	3087	72 17 16	3086
	Saturn	E.	62 22 47	3101	60 54 38	3101	59 26 30	3102	57 58 23	3102

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
24	Spica	E.	71° 42′ 9″	3071	70° 13′ 24″	3072	68° 44′ 40″	3072	67° 15′ 56″	3073
	Jupiter	E.	103 59 13	3121	102 31 29	3121	101 3 45	3122	99 36 2	3122
	Antares	E.	117 5 9	3096	115 36 55	3097	114 8 42	3097	112 40 29	3096
25	*a* Arietis	W.	106 50 28	3122	108 18 11	3122	109 45 54	3123	111 13 36	3122
	Aldebaran	W.	73 45 43	3086	75 14 10	3084	76 42 39	3083	78 11 9	3082
	Pollux	W.	32 46 2	3340	34 9 27	3320	35 33 15	3302	36 57 24	3286
	Saturn	E.	56 30 16	3103	55 2 10	3103	53 34 4	3104	52 5 59	3104
	Spica	E.	59 52 21	3073	58 23 38	3071	56 54 53	3071	55 26 8	3069
	Jupiter	E.	92 17 28	3121	90 49 44	3120	89 21 59	3119	87 54 13	3119
	Antares	E.	105 19 16	3094	103 50 59	3094	102 22 42	3092	100 54 23	3091
26	Aldebaran	W.	85 34 6	3073	87 2 48	3071	88 31 33	3068	90 0 22	3065
	Pollux	W.	44 2 26	3222	45 28 9	3212	46 54 4	3202	48 20 11	3193
	Saturn	E.	44 45 35	3104	43 17 30	3104	41 49 25	3104	40 21 20	3105
	Spica	E.	48 1 57	3061	46 33 0	3060	45 4 1	3056	43 34 58	3054
	Jupiter	E.	80 34 58	3110	79 7 0	3107	77 38 59	3104	76 10 54	3101
	Antares	E.	93 32 22	3082	92 3 50	3080	90 35 16	3078	89 6 39	3074
	Venus	E.	110 11 51	3514	108 51 42	3512	107 31 31	3509	106 11 17	3506
27	Aldebaran	W.	97 25 23	3047	98 54 37	3043	100 23 56	3039	101 53 21	3034
	Pollux	W.	55 33 26	3149	57 0 36	3141	58 27 56	3133	59 55 25	3125
	Spica	E.	36 8 46	3035	34 39 17	3032	33 9 44	3027	31 40 5	3022
	Jupiter	E.	68 49 31	3082	67 21 0	3078	65 52 24	3073	64 23 42	3068
	Antares	E.	81 42 35	3057	80 13 33	3053	78 44 26	3048	77 15 13	3043
	Venus	E.	99 29 9	3487	98 8 30	3481	96 47 45	3477	95 26 55	3471
	Mars	E.	103 41 36	3316	102 17 42	3309	100 53 41	3304	99 29 34	3299
28	Pollux	W.	67 15 21	3083	68 43 51	3074	70 12 32	3066	71 41 23	3056
	Regulus	W.	30 13 39	3068	31 42 28	3054	33 11 34	3042	34 40 55	3030
	Jupiter	E.	56 58 27	3038	55 29 1	3030	53 59 26	3023	52 29 42	3016
	Antares	E.	69 47 35	3016	68 17 42	3010	66 47 42	3003	65 17 33	2996
	Venus	E.	88 41 6	3438	87 19 33	3431	85 57 52	3423	84 36 2	3415
	Mars	E.	92 27 19	3268	91 2 30	3261	89 37 33	3253	88 12 27	3245
	Sun	E.	129 55 11	3400	128 32 55	3392	127 10 29	3383	125 47 53	3373
29	Pollux	W.	79 8 34	3008	80 38 37	2998	82 8 52	2988	83 39 20	2977
	Regulus	W.	42 11 24	2970	43 42 14	2958	45 13 20	2946	46 44 40	2934
	Antares	E	57 44 31	2958	56 13 25	2949	54 42 8	2941	53 10 41	2931
	Venus	E.	77 44 23	3369	76 21 31	3358	74 58 26	3347	73 35 9	3335
	Mars	E.	81 4 26	3200	79 38 17	3191	78 11 57	3180	76 45 24	3169
	Sun	E.	118 52 9	3324	117 28 25	3313	116 4 29	3302	114 40 20	3290
30	Pollux	W.	91 15 13	2919	92 47 8	2906	94 19 19	2894	95 51 45	2881
	Regulus	W.	54 25 21	2869	55 58 19	2855	57 31 35	2842	59 5 8	2828
	Antares	E.	45 30 27	2883	43 57 47	2874	42 24 55	2863	40 51 49	2854
	Venus	E.	66 35 17	3273	65 10 34	3259	63 45 35	3245	62 20 19	3231
	Mars	E.	69 29 14	3110	68 1 16	3097	66 33 3	3083	65 4 33	3070
	Sun*	E.	107 36 0	3226	106 10 22	3218	104 44 28	3198	103 18 17	3183
31	Pollux	W.	103 38 9	2815	105 12 18	2801	106 46 45	2787	108 21 30	2772
	Regulus	W.	66 57 37	2753	68 33 6	2738	70 8 56	2722	71 45 7	2706
	Venus	E.	55 9 37	3153	53 42 32	3137	52 15 7	3120	50 47 22	3103
	Mars	E.	57 37 48	2996	56 7 30	2981	54 36 53	2965	53 5 56	2949
	Sun	E.	96 2 51	3106	94 34 49	3090	93 6 27	3073	91 37 44	3056

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
24	Spica	E.	65° 47′ 13″	3073	64° 18′ 30″	3073	62° 49′ 47″	3073	61° 21′ 4″	3073
	Jupiter	E.	98 8 19	3123	96 40 37	3122	95 12 54	3122	93 45 11	3122
	Antares	E.	111 12 15	3096	109 44 1	3096	108 15 47	3096	106 47 32	3095
25	a Arietis	W.	112 41 19	3122	114 9 2	3122	115 36 45	3122	117 4 28	3121
	Aldebaran	W.	79 39 41	3081	81 8 14	3079	82 36 49	3078	84 5 26	3075
	Pollux	W.	38 21 52	3271	39 46 37	3257	41 11 39	3244	42 36 56	3233
	Saturn	E.	50 37 54	3104	49 9 49	3104	47 41 44	3104	46 13 39	3105
	Spica	E.	53 57 21	3069	52 28 33	3067	50 59 43	3065	49 30 51	3064
	Jupiter	E.	86 26 26	3117	84 58 37	3115	83 30 46	3114	82 2 53	3112
	Antares	E.	99 26 3	3090	97 57 41	3088	96 29 17	3087	95 0 51	3084
26	Aldebaran	W.	91 29 14	3062	92 58 10	3059	94 27 10	3056	95 56 14	3052
	Pollux	W.	49 46 29	3183	51 12 58	3175	52 39 37	3167	54 6 26	3158
	Saturn	E.	38 53 16	3105	37 25 12	3105	35 57 8	3105	34 29 4	3105
	Spica	E.	42 5 52	3051	40 36 42	3047	39 7 28	3044	37 38 10	3039
	Jupiter	E.	74 42 46	3098	73 14 34	3095	71 46 18	3091	70 17 57	3087
	Antares	E.	87 37 58	3071	86 9 13	3069	84 40 25	3065	83 11 32	3061
	Venus	E.	104 50 59	3503	103 30 38	3499	102 10 13	3495	100 49 43	3491
27	Aldebaran	W.	103 22 52	3029	104 52 29	3023	106 22 13	3018	107 52 4	3011
	Pollux	W.	61 23 4	3117	62 50 53	3109	64 18 52	3101	65 47 1	3091
	Spica	E.	30 10 20	3018	28 40 29	3012	27 10 31	3005	25 40 25	2998
	Jupiter	E.	62 54 53	3063	61 25 58	3056	59 56 55	3051	58 27 45	3044
	Antares	E.	75 45 54	3039	74 16 29	3034	72 46 58	3028	71 17 20	3022
	Venus	E.	94 5 59	3465	92 44 56	3460	91 23 47	3453	90 2 30	3446
	Mars	E.	98 5 21	3293	96 41 1	3287	95 16 34	3281	93 52 0	3275
28	Pollux	W.	73 10 26	3047	74 39 40	3038	76 9 6	3028	77 38 44	3018
	Regulus	W.	36 10 31	3018	37 40 22	3005	39 10 28	2993	40 40 49	2982
	Jupiter	E.	50 59 49	3008	49 29 46	2999	47 59 32	2990	46 29 7	2981
	Antares	E.	63 47 15	2989	62 16 48	2981	60 46 12	2973	59 15 26	2966
	Venus	E.	83 14 3	3407	81 51 54	3397	80 29 34	3388	79 7 4	3379
	Mars	E.	86 47 11	3237	85 21 46	3228	83 56 10	3219	82 30 23	3210
	Sun	E.	124 25 6	3364	123 2 8	3355	121 39 0	3346	120 15 40	3335
29	Pollux	W.	85 10 2	2965	86 40 58	2954	88 12 8	2942	89 43 33	2931
	Regulus	W.	48 16 16	2921	49 48 8	2909	51 20 16	2896	52 52 40	2883
	Antares	E	51 39 2	2922	50 7 11	2913	48 35 9	2903	47 2 54	2894
	Venus	E.	72 11 38	3324	70 47 54	3312	69 23 56	3300	67 59 44	3287
	Mars	E.	75 18 38	3158	73 51 38	3147	72 24 25	3134	70 56 57	3122
	Sun	E.	113 15 57	3278	111 51 20	3266	110 26 29	3253	109 1 22	3240
30	Pollux	W.	97 24 28	2868	98 57 28	2855	100 30 44	2842	102 4 18	2828
	Regulus	W.	60 39 0	2813	62 13 11	2799	63 47 40	2784	65 22 29	2769
	Antares	E.	39 18 31	2844	37 45 0	2835	36 11 17	2825	34 37 21	2816
	Venus	E.	60 54 47	3216	59 28 57	3201	58 2 49	3186	56 36 23	3169
	Mars	E.	63 35 47	3056	62 6 44	3043	60 37 24	3028	59 7 46	3012
	Sun	E.	101 51 48	3169	100 25 2	3153	98 57 57	3138	97 30 34	3122
31	Pollux	W.	109 56 34	2758	111 31 57	2744	113 7 38	2730	114 43 38	2714
	Regulus	W.	73 21 39	2689	74 58 33	2672	76 35 50	2656	78 13 29	2638
	Venus	E.	49 19 16	3086	47 50 49	3068	46 22 0	3050	44 52 49	3032
	Mars	E.	51 34 39	2933	50 3 2	2916	48 31 4	2900	46 58 45	2883
	Sun	E.	90 8 40	3039	88 39 15	3021	87 9 28	3002	85 39 18	2985

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	20 57 41.74	10.201	S. 17 13 0.0	42.40	16 16.04	68.32	13 49.37	0.345
Tues.	2	21 1 46.18	10.168	16 55 53.2	43.15	16 15.88	68.21	13 57.24	0.312
Wed.	3	21 5 49.82	10.135	16 38 28.5	43.88	16 15.72	68.09	14 4.31	0.278
Thur.	4	21 9 52.66	10.102	16 20 46.3	44.60	16 15.56	67.97	14 10.57	0.245
Fri.	5	21 13 54.69	10.068	16 2 47.0	45.30	16 15.40	67.85	14 16.03	0.211
Sat.	6	21 17 55.90	10.035	15 44 31.3	45.98	16 15.23	67.73	14 20.68	0.178
Sun.	7	21 21 56.31	10.001	15 25 59.6	46.64	16 15.06	67.61	14 24.53	0.144
Mon.	8	21 25 55.92	9.968	15 7 12.1	47.29	16 14.88	67.50	14 27.57	0.111
Tues.	9	21 29 54.72	9.934	14 48 9.4	47.92	16 14.70	67.39	14 29.81	0.077
Wed.	10	21 33 52.73	9.901	14 28 51.8	48.53	16 14.52	67.28	14 31.26	0.044
Thur.	11	21 37 49.94	9.868	14 9 19.8	49.12	16 14.34	67.17	14 31.92	0.011
Fri.	12	21 41 46.35	9.835	13 49 33.9	49.69	16 14.15	67.06	14 31.78	0.022
Sat.	13	21 45 41.98	9.803	13 29 34.5	50.24	16 13.96	66.95	14 30.85	0.054
Sun.	14	21 49 36.84	9.771	13 9 22.1	50.78	16 13.77	66.84	14 29.16	0.086
Mon.	15	21 53 30.94	9.740	12 48 56.9	51.30	16 13.58	66.74	14 26.71	0.117
Tues.	16	21 57 24.29	9.709	12 28 19.5	51.80	16 13.38	66.64	14 23.51	0.148
Wed.	17	22 1 16.89	9.678	12 7 30.2	52.29	16 13.18	66.54	14 19.58	0.179
Thur.	18	22 5 8.76	9.648	11 46 29.5	52.76	16 12.98	66.44	14 14.90	0.209
Fri.	19	22 8 59.93	9.618	11 25 17.7	53.21	16 12.77	66.34	14 9.53	0.238
Sat.	20	22 12 50.41	9.590	11 3 55.2	53.65	16 12.55	66.24	14 3.47	0.266
Sun.	21	22 16 40.21	9.562	10 42 22.5	54.07	16 12.33	66.15	13 56.73	0.294
Mon.	22	22 20 29.35	9.535	10 20 39.9	54.47	16 12.10	66.06	13 49.34	0.320
Tues.	23	22 24 17.84	9.509	9 58 47.7	54.86	16 11.87	65.97	13 41.30	0.346
Wed.	24	22 28 5.72	9.484	9 36 46.4	55.23	16 11.64	65.78	13 32.64	0.371
Thur.	25	22 31 53.02	9.460	9 14 36.4	55.59	16 11.41	65.79	13 23.41	0.396
Fri.	26	22 35 39.74	9.436	8 52 18.1	55.93	16 11.17	65.71	13 13.61	0.420
Sat.	27	22 39 25.89	9.413	8 29 51.9	56.25	16 10.93	65.63	13 3.23	0.443
Sun.	28	22 43 11.49	9.391	8 7 18.1	56.56	16 10.69	65.55	12 52.31	0.465
Mon.	29	22 46 56.57	9.369	7 44 37.0	56.85	16 10.44	65.47	12 40.88	0.487
Tues.	30	22 50 41.15	9.348	S. 7 21 49.0	57.13	16 10.19	65.39	12 28.94	0.507

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	20 57 39.39	10.201	S. 17 13 9.8	42.40	13 49.29	0.345	20 43 50.10
Tues.	2	21 1 43.82	10.168	16 56 3.3	43.15	13 57.16	0.312	20 47 46.66
Wed.	3	21 5 47.45	10.135	16 38 38.9	43.88	14 4.24	0.278	20 51 43.21
Thur.	4	21 9 50.28	10.102	16 20 56.9	44.60	14 10.51	0.245	20 55 39.77
Fri.	5	21 13 52.30	10.068	16 2 57.8	45.30	14 15.98	0.211	20 59 36.32
Sat.	6	21 17 53.51	10.035	15 44 42.3	45.98	14 20.63	0.178	21 3 32.88
Sun.	7	21 21 53.92	10.001	15 26 10.8	46.64	14 24.49	0.144	21 7 29.43
Mon.	8	21 25 53.53	9.968	15 7 23.5	47.29	14 27.54	0.111	21 11 25.99
Tues.	9	21 29 52.33	9.934	14 48 21.0	47.92	14 29.79	0.077	21 15 22.54
Wed.	10	21 33 50.34	9.901	14 29 3.6	48.53	14 31.25	0.044	21 19 19.09
Thur.	11	21 37 47.56	9.868	14 9 31.8	49.12	14 31.91	0.011	21 23 15.65
Fri.	12	21 41 43.98	9.835	13 49 46.0	49.69	14 31.78	0.022	21 27 12.20
Sat.	13	21 45 39.62	9.803	13 29 46.7	50.24	14 30.86	0.054	21 31 8.76
Sun.	14	21 49 34.49	9.771	13 9 34.4	50.78	14 29.18	0.086	21 35 5.31
Mon.	15	21 53 28.60	9.740	12 49 9.3	51.30	14 26.74	0.117	21 39 1.86
Tues.	16	21 57 21.96	9.709	12 28 32.0	51.80	14 23.54	0.148	21 42 58.42
Wed.	17	22 1 14.58	9.678	12 7 42.8	52.29	14 19.61	0.179	21 46 54.97
Thur.	18	22 5 6.47	9.648	11 46 42.1	52.76	14 14.94	0.209	21 50 51.53
Fri.	19	22 8 57.66	9.618	11 25 30.3	53.21	14 9.58	0.238	21 54 48.08
Sat.	20	22 12 48.16	9.590	11 4 7.8	53.65	14 3.53	0.266	21 58 44.63
Sun.	21	22 16 37.98	9.562	10 42 35.1	54.07	13 56.79	0.294	22 2 41.19
Mon.	22	22 20 27.14	9.535	10 20 52.5	54.47	13 49.40	0.320	22 6 37.74
Tues.	23	22 24 15.66	9.509	9 59 0.3	54.86	13 41.37	0.346	22 10 34.29
Wed.	24	22 28 3.57	9.484	9 36 58.9	55.23	13 32.72	0.371	22 14 30.85
Thur.	25	22 31 50.90	9.460	9 14 48.8	55.59	13 23.50	0.396	22 18 27.40
Fri.	26	22 35 37.65	9.436	8 52 30.4	55.93	13 13.70	0.420	22 22 23.95
Sat.	27	22 39 23.83	9.413	8 30 4.1	56.25	13 3.32	0.443	22 26 20.51
Sun.	28	22 43 9.46	9.391	8 7 30.2	56.56	12 52.40	0.465	22 30 17.06
Mon.	29	22 46 54.58	9.369	7 44 49.0	56.85	12 40.97	0.487	22 34 13.61
Tues.	30	22 50 39.20	9.348	S. 7 22 0.9	57.13	12 29.04	0.507	22 38 10.16

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	32	311 57 17.4	56 57.8	152.19	+0.21	9.9937050	28.7	3 15 37.76
2	33	312 58 9.5	57 49.8	152.15	0.34	.9937748	29.4	3 11 41.85
3	34	313 59 0.7	58 40.9	152.12	0.46	.9938463	30.0	3 7 45.94
4	35	314 59 51.1	59 31.2	152.08	0.56	.9939193	30.6	3 3 50.04
5	36	316 0 40.5	0 20.4	152.03	0.64	.9939937	31.2	2 59 54.13
6	37	317 1 28.6	1 8.4	151.98	0.70	.9940694	31.7	2 55 58.22
7	38	318 2 15.5	1 55.2	151.93	0.73	.9941462	32.2	2 52 2.31
8	39	319 3 1.2	2 40.8	151.87	0.73	.9942241	32.7	2 48 6.40
9	40	320 3 45.6	3 25.1	151.81	0.70	.9943032	33.2	2 44 10.50
10	41	321 4 28.5	4 7.8	151.75	0.64	.9943835	33.7	2 40 14.59
11	42	322 5 9.8	4 49.0	151.69	0.55	.9944650	34.2	2 36 18.68
12	43	323 5 49.5	5 28.6	151.62	0.44	.9945477	34.7	2 32 22.77
13	44	324 6 27.5	6 6.5	151.55	0.31	.9946317	35.3	2 28 26.86
14	45	325 7 3.7	6 42.6	151.47	0.17	.9947171	35.9	2 24 30.96
15	46	326 7 38.2	7 16.9	151.40	+0.03	.9948040	36.5	2 20 35.05
16	47	327 8 10.8	7 49.4	151.32	—0.11	.9948925	37.2	2 16 39.14
17	48	328 8 41.6	8 20.1	151.25	0.24	.9949827	37.9	2 12 43.23
18	49	329 9 10.6	8 49.0	151.17	0.34	.9950746	38.6	2 8 47.32
19	50	330 9 37.8	9 16.1	151.10	0.43	.9951683	39.4	2 4 51.42
20	51	331 10 3.2	9 41.3	151.02	0.49	.9952639	40.2	2 0 55.51
21	52	332 10 26.9	10 4.9	150.95	0.51	.9953616	41.0	1 56 59.60
22	53	333 10 48.8	10 26.7	150.88	0.51	.9954613	41.8	1 53 3.69
23	54	334 11 9.0	10 46.8	150.81	0.48	.9955628	42.6	1 49 7.78
24	55	335 11 27.6	11 5.3	150.74	0.42	.9956662	43.4	1 45 11.88
25	56	336 11 44.7	11 22.3	150.68	0.33	.9957715	44.2	1 41 15.97
26	57	337 12 0.3	11 37.8	150.62	0.23	.9958786	44.9	1 37 20.06
27	58	338 12 14.3	11 51.7	150.55	—0.11	.9959872	45.5	1 33 24.15
28	59	339 12 26.7	12 4.0	150.48	+0.01	.9960972	46.1	1 29 28.20
29	60	340 12 37.5	12 14.7	150.42	0.13	.9962085	46.6	1 25 32.35
30	61	341 12 46.8	12 23.9	150.35	+0.25	9.9963210	47.0	1 21 36.44

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 37.0	15 44.4	57 12.1	+2.22	57 39.4	+2.31	18 57.6	2.28	23.2
2	15 52.1	15 59.9	58 7.6	2.37	58 36.3	2.39	19 54.1	2.42	24.2
3	16 7.7	16 15.3	59 4.9	2.35	59 32.8	2.26	20 53.4	2.51	25.2
4	16 22.5	16 29.1	59 59.2	2.11	60 23.5	1.90	21 54.1	2.53	26.2
5	16 34.9	16 39.7	60 44.8	1.63	61 2.5	1.30	22 54.6	2.50	27.2
6	16 43.4	16 45.8	61 16.0	0.93	61 24.7	+0.52	23 53.7	2.42	28.2
7	16 46.8	16 46.3	61 28.4	+0.09	61 26.9	−0.34	☌		29.2
8	16 44.5	16 41.4	61 20.2	−0.76	61 8.6	1.15	0 50.7	2.33	0.7
9	16 37.0	16 31.6	60 52.6	1.50	60 32.6	1.81	1 45.6	2.25	1.7
10	16 25.2	16 18.1	60 9.2	2.05	59 43.3	2.24	2 38.9	2.20	2.7
11	16 10.6	16 2.7	59 15.6	2.36	58 46.7	2.42	3 31.2	2.17	3.7
12	15 54.8	15 46.9	58 17.5	2.43	57 48.4	2.39	4 23.0	2.15	4.7
13	15 39.2	15 31.8	57 20.1	2.31	56 53.0	2.20	5 14.5	2.14	5.7
14	15 24.8	15 18.3	56 27.4	2.06	56 3.6	1.90	6 5.8	2.13	6.7
15	15 12.4	15 7.0	55 41.8	1.73	55 22.0	1.56	6 56.8	2.11	7.7
16	15 2.2	14 58.0	55 4.4	1.38	54 48.9	1.20	7 47.0	2.07	8.7
17	14 54.4	14 51.3	54 35.6	1.02	54 24.5	0.85	8 36.0	2.01	9.7
18	14 48.8	14 46.9	54 15.4	0.68	54 8.2	0.52	9 23.4	1.95	10.7
19	14 45.5	14 44.5	54 2.9	0.37	53 59.3	−0.23	10 9.3	1.88	11.7
20	14 44.0	14 43.9	53 57.4	−0.09	53 57.1	+0.03	10 53.7	1.82	12.7
21	14 44.2	14 44.8	53 58.1	+0.14	54 0.5	0.25	11 36.8	1.78	13.7
22	14 45.8	14 47.2	54 4.2	0.36	54 9.1	0.46	12 19.2	1.76	14.7
23	14 48.8	14 50.8	54 15.2	0.55	54 22.5	0.63	13 1.3	1.76	15.7
24	14 53.1	14 55.7	54 31.0	0.72	54 40.6	0.85	13 43.9	1.79	16.7
25	14 58.7	15 2.0	54 51.5	0.96	55 3.7	1.07	14 27.5	1.85	17.7
26	15 5.7	15 9.7	55 17.1	1.18	55 31.9	1.29	15 13.0	1.94	18.7
27	15 14.1	15 18.9	55 48.1	1.40	56 5.6	1.51	16 0.8	2.05	19.7
28	15 24.0	15 29.5	56 24.4	1.62	56 44.5	1.73	16 51.4	2.17	20.7
29	15 35.3	15 41.4	57 5.9	1.83	57 28.4	1.91	17 44.9	2.29	21.7
30	15 47.8	15 54.3	57 51.7	+1.97	58 15.8	+2.01	18 41.0	2.38	22.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 1.

Hour.	Right Ascension.	Diff. for 1 m	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 0 40.85	2.2580	S. 17 41 45.5	6.436
1	15 2 56.50	2.2637	17 48 9.0	6.348
2	15 5 12.49	2.2693	17 54 27.2	6.259
3	15 7 28.82	2.2750	18 0 40.0	6.168
4	15 9 45.49	2.2806	18 6 47.3	6.076
5	15 12 2.50	2.2863	18 12 49.1	5.983
6	15 14 19.85	2.2920	18 18 45.2	5.889
7	15 16 37.54	2.2977	18 24 35.6	5.793
8	15 18 55.57	2.3033	18 30 20.3	5.697
9	15 21 13.94	2.3090	18 35 59.2	5.600
10	15 23 32.65	2.3147	18 41 32.3	5.502
11	15 25 51.70	2.3204	18 46 59.4	5.402
12	15 28 11.09	2.3260	18 52 20.5	5.301
13	15 30 30.82	2.3317	18 57 35.5	5.200
14	15 32 50.89	2.3373	19 2 44.5	5.097
15	15 35 11.29	2.3429	19 7 47.3	4.993
16	15 37 32.03	2.3485	19 12 43.7	4.888
17	15 39 53.11	2.3541	19 17 33.8	4.783
18	15 42 14.52	2.3596	19 22 17.6	4.676
19	15 44 36.26	2.3651	19 26 55.0	4.568
20	15 46 58.33	2.3706	19 31 25.9	4.459
21	15 49 20.73	2.3761	19 35 50.1	4.349
22	15 51 43.46	2.3816	19 40 7.7	4.238
23	15 54 6.52	2.3870	S. 19 44 18.7	4.127

TUESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m	Declination.	Diff. for 1 m.
0	15 56 29.90	2.3924	S. 19 48 22.9	4.014
1	15 58 53.60	2.3977	19 52 20.3	3.899
2	16 1 17.63	2.4031	19 56 10.8	3.784
3	16 3 41.98	2.4084	19 59 54.3	3.668
4	16 6 6.64	2.4137	20 3 30.9	3.551
5	16 8 31.62	2.4189	20 7 0.4	3.433
6	16 10 56.91	2.4241	20 10 22.8	3.314
7	16 13 22.51	2.4292	20 13 38.0	3.193
8	16 15 48.41	2.4343	20 16 46.0	3.072
9	16 18 14.62	2.4393	20 19 46.7	2.950
10	16 20 41.13	2.4443	20 22 40.1	2.827
11	16 23 7.94	2.4492	20 25 26.1	2.703
12	16 25 35.04	2.4541	20 28 4.5	2.578
13	16 28 2.43	2.4589	20 30 35.4	2.453
14	16 30 30.12	2.4637	20 32 58.8	2.327
15	16 32 58.09	2.4684	20 35 14.6	2.199
16	16 35 26.33	2.4731	20 37 22.7	2.071
17	16 37 54.85	2.4777	20 39 23.1	1.942
18	16 40 23.66	2.4822	20 41 15.7	1.812
19	16 42 52.73	2.4867	20 43 0.5	1.680
20	16 45 22.06	2.4911	20 44 37.3	1.548
21	16 47 51.65	2.4954	20 46 6.2	1.416
22	16 50 21.51	2.4996	20 47 27.2	1.283
23	16 52 51.62	2.5038	20 48 40.2	1.149
24	16 55 21.97	2.5079	S. 20 49 45.1	1.014

WEDNESDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 55 21.97	2.5079	S. 20 49 45.1	1.014
1	16 57 52.57	2.5120	20 50 41.9	0.878
2	17 0 23.41	2.5160	20 51 30.5	0.742
3	17 2 54.49	2.5198	20 52 10.9	0.605
4	17 5 25.79	2.5236	20 52 43.1	0.468
5	17 7 57.32	2.5274	20 53 7.0	0.330
6	17 10 29.08	2.5311	20 53 22.6	0.191
7	17 13 1.05	2.5346	20 53 29.9	0.052
8	17 15 33.23	2.5380	20 53 28.8	0.088
9	17 18 5.61	2.5414	20 53 19.3	0.229
10	17 20 38.20	2.5447	20 53 1.3	0.370
11	17 23 10.98	2.5479	20 52 34.8	0.512
12	17 25 43.95	2.5510	20 51 59.9	0.654
13	17 28 17.11	2.5541	20 51 16.4	0.797
14	17 30 50.44	2.5570	20 50 24.3	0.940
15	17 33 23.94	2.5598	20 49 23.6	1.083
16	17 35 57.61	2.5625	20 48 14.4	1.227
17	17 38 31.44	2.5652	20 46 56.5	1.371
18	17 41 5.43	2.5678	20 45 29.9	1.515
19	17 43 39.57	2.5702	20 43 54.7	1.660
20	17 46 13.85	2.5725	20 42 10.7	1.805
21	17 48 48.27	2.5748	20 40 18.0	1.951
22	17 51 22.82	2.5769	20 38 16.6	2.097
23	17 53 57.49	2.5789	S. 20 36 6.4	2.243

THURSDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 56 32.29	2.5808	S. 20 33 47.5	2.389
1	17 59 7.20	2.5827	20 31 19.8	2.535
2	18 1 42.22	2.5845	20 28 43.4	2.681
3	18 4 17.34	2.5861	20 25 58.2	2.827
4	18 6 52.55	2.5876	20 23 4.2	2.973
5	18 9 27.85	2.5891	20 20 1.4	3.119
6	18 12 3.24	2.5904	20 16 49.9	3.265
7	18 14 38.70	2.5916	20 13 29.6	3.412
8	18 17 14.23	2.5927	20 10 0.5	3.558
9	18 19 49.82	2.5938	20 6 22.6	3.704
10	18 22 25.48	2.5948	20 2 36.0	3.850
11	18 25 1.19	2.5956	19 58 40.6	3.996
12	18 27 36.95	2.5963	19 54 36.5	4.142
13	18 30 12.74	2.5968	19 50 23.6	4.287
14	18 32 48.57	2.5973	19 46 2.0	4.432
15	18 35 24.42	2.5978	19 41 31.7	4.577
16	18 38 0.31	2.5981	19 36 52.8	4.722
17	18 40 36.21	2.5983	19 32 5.2	4.866
18	18 43 12.11	2.5984	19 27 8.9	5.010
19	18 45 48.02	2.5984	19 22 4.0	5.153
20	18 48 23.92	2.5983	19 16 50.5	5.296
21	18 50 59.81	2.5981	19 11 28.4	5.439
22	18 53 35.69	2.5978	19 5 57.8	5.581
23	18 56 11.55	2.5975	19 0 18.7	5.722
24	18 58 47.39	2.5970	S. 18 54 31.2	5.863

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 58 47.39	2.5970	S. 18 54 31.2	5.863
1	19 1 23.20	2.5964	18 48 35.2	6.003
2	19 3 58.96	2.5957	18 42 30.8	6.143
3	19 6 34.68	2.5950	18 36 18.0	6.282
4	19 9 10.36	2.5942	18 29 57.0	6.420
5	19 11 45.99	2.5933	18 23 27.7	6.558
6	19 14 21.55	2.5923	18 16 50.1	6.695
7	19 16 57.05	2.5911	18 10 4.3	6.831
8	19 19 32.48	2.5899	18 3 10.4	6.966
9	19 22 7.83	2.5886	17 56 8.4	7.100
10	19 24 43.11	2.5872	17 48 58.4	7.233
11	19 27 18.30	2.5858	17 41 40.4	7.366
12	19 29 53.41	2.5843	17 34 14.5	7.496
13	19 32 28.42	2.5827	17 26 40.7	7.628
14	19 35 3.33	2.5810	17 18 59.1	7.758
15	19 37 38.14	2.5792	17 11 9.7	7.887
16	19 40 12.83	2.5773	17 3 12.7	8.015
17	19 42 47.41	2.5754	16 55 8.0	8.141
18	19 45 21.88	2.5734	16 46 55.8	8.266
19	19 47 56.23	2.5714	16 38 36.1	8.391
20	19 50 30.45	2.5693	16 30 8.9	8.514
21	19 53 4.54	2.5671	16 21 34.4	8.636
22	19 55 38.50	2.5649	16 12 52.6	8.757
23	19 58 12.33	2.5626	S. 16 4 3.6	8.876

SATURDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 0 46.01	2.5602	S. 15 55 7.5	8.994
1	20 3 19.55	2.5578	15 46 4.4	9.111
2	20 5 52.94	2.5553	15 36 54.2	9.227
3	20 8 26.18	2.5527	15 27 37.1	9.342
4	20 10 59.26	2.5501	15 18 13.2	9.455
5	20 13 32.19	2.5475	15 8 42.5	9.567
6	20 16 4.96	2.5448	14 59 5.2	9.677
7	20 18 37.56	2.5420	14 49 21.4	9.785
8	20 21 10.00	2.5392	14 39 31.0	9.892
9	20 23 42.27	2.5363	14 29 34.2	9.999
10	20 26 14.36	2.5335	14 19 31.1	10.104
11	20 28 46.28	2.5306	14 9 21.8	10.207
12	20 31 18.03	2.5276	13 59 6.3	10.308
13	20 33 49.60	2.5246	13 48 44.8	10.408
14	20 36 20.98	2.5216	13 38 17.3	10.506
15	20 38 52.18	2.5185	13 27 44.0	10.603
16	20 41 23.20	2.5154	13 17 4.9	10.699
17	20 43 54.03	2.5123	13 6 20.1	10.793
18	20 46 24.67	2.5091	12 55 29.8	10.885
19	20 48 55.12	2.5059	12 44 34.0	10.976
20	20 51 25.38	2.5027	12 33 32.7	11.065
21	20 53 55.44	2.4994	12 22 26.1	11.153
22	20 56 25.31	2.4962	12 11 14.4	11.239
23	20 58 54.98	2.4929	11 59 57.6	11.322
24	21 1 24.46	2.4896	S. 11 48 35.8	11.404

SUNDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 1 24.46	2.4896	S. 11 48 35.8	11.404
1	21 3 53.74	2.4863	11 37 9.1	11.485
2	21 6 22.82	2.4830	11 25 37.6	11.564
3	21 8 51.70	2.4797	11 14 1.4	11.641
4	21 11 20.39	2.4764	11 2 20.7	11.716
5	21 13 48.87	2.4730	10 50 35.5	11.790
6	21 16 17.15	2.4697	10 38 45.9	11.862
7	21 18 45.23	2.4663	10 26 52.0	11.933
8	21 21 13.11	2.4629	10 14 54.0	12.002
9	21 23 40.78	2.4595	10 2 51.9	12.068
10	21 26 8.25	2.4562	9 50 45.8	12.133
11	21 28 35.52	2.4528	9 38 35.9	12.197
12	21 31 2.59	2.4495	9 26 22.2	12.259
13	21 33 29.46	2.4461	9 14 4.9	12.318
14	21 35 56.12	2.4428	9 1 44.0	12.376
15	21 38 22.58	2.4394	8 49 19.7	12.433
16	21 40 48.84	2.4361	8 36 52.1	12.486
17	21 43 14.90	2.4327	8 24 21.3	12.540
18	21 45 40.76	2.4294	8 11 47.3	12.591
19	21 48 6.42	2.4261	7 59 10.3	12.640
20	21 50 31.88	2.4228	7 46 30.5	12.687
21	21 52 57.15	2.4194	7 33 47.9	12.733
22	21 55 22.22	2.4161	7 21 2.6	12.777
23	21 57 47.09	2.4129	S. 7 8 14.7	12.819

MONDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 0 11.77	2.4096	S. 6 55 24.3	12.859
1	22 2 36.25	2.4064	6 42 31.6	12.898
2	22 5 0.54	2.4031	6 29 36.6	12.935
3	22 7 24.63	2.3999	6 16 39.5	12.969
4	22 9 48.53	2.3967	6 3 40.3	13.002
5	22 12 12.24	2.3936	5 50 39.2	13.034
6	22 14 35.76	2.3905	5 37 36.3	13.064
7	22 16 59.10	2.3874	5 24 31.6	13.092
8	22 19 22.25	2.3843	5 11 25.3	13.118
9	22 21 45.22	2.3812	4 58 17.5	13.142
10	22 24 8.00	2.3782	4 45 8.3	13.164
11	22 26 30.60	2.3752	4 31 57.8	13.185
12	22 28 53.03	2.3722	4 18 46.1	13.204
13	22 31 15.28	2.3693	4 5 33.3	13.222
14	22 33 37.35	2.3664	3 52 19.5	13.237
15	22 35 59.25	2.3635	3 39 4.8	13.251
16	22 38 20.97	2.3606	3 25 49.4	13.263
17	22 40 42.52	2.3578	3 12 33.3	13.274
18	22 43 3.91	2.3550	2 59 16.5	13.283
19	22 45 25.13	2.3522	2 45 59.2	13.291
20	22 47 46.18	2.3495	2 32 41.6	13.297
21	22 50 7.07	2.3468	2 19 23.7	13.301
22	22 52 27.80	2.3441	2 6 5.5	13.303
23	22 54 48.37	2.3415	1 52 47.3	13.303
24	22 57 8.79	2.3389	S. 1 39 29.1	13.302

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 57 8.79	2.3389	S. 1 39 29.1	13.302
1	22 59 29.05	2.3363	1 26 11.0	13.300
2	23 1 49.15	2.3338	1 12 53.1	13.296
3	23 4 9.10	2.3313	0 59 35.5	13.290
4	23 6 28.91	2.3288	0 46 18.3	13.282
5	23 8 48.57	2.3264	0 33 1.6	13.273
6	23 11 8.08	2.3240	0 19 45.5	13.262
7	23 13 27.45	2.3217	S. 0 6 30.1	13.250
8	23 15 46.68	2.3194	N. 0 6 44.5	13.236
9	23 18 5.77	2.3171	0 19 58.2	13.221
10	23 20 24.73	2.3148	0 33 11.0	13.205
11	23 22 43.56	2.3126	0 46 22.8	13.187
12	23 25 2.25	2.3104	0 59 33.4	13.167
13	23 27 20.81	2.3083	1 12 42.8	13.145
14	23 29 39.25	2.3062	1 25 50.8	13.122
15	23 31 57.57	2.3042	1 38 57.4	13.098
16	23 34 15.76	2.3022	1 52 2.6	13.073
17	23 36 33.83	2.3002	2 5 6.2	13.046
18	23 38 51.79	2.2983	2 18 8.1	13.018
19	23 41 9.63	2.2964	2 31 8.2	12.988
20	23 43 27.35	2.2945	2 44 6.6	12.957
21	23 45 44.96	2.2927	2 57 3.1	12.924
22	23 48 2.47	2.2909	3 9 57.5	12.890
23	23 50 19.87	2.2891	N. 3 22 49.9	12.855

WEDNESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 52 37.17	2.2874	N. 3 35 40.1	12.818
1	23 54 54.37	2.2857	3 48 28.1	12.780
2	23 57 11.46	2.2840	4 1 13.7	12.741
3	23 59 28.45	2.2824	4 13 56.9	12.700
4	0 1 45.35	2.2808	4 26 37.7	12.658
5	0 4 2.16	2.2793	4 39 15.9	12.614
6	0 6 18.87	2.2778	4 51 51.4	12.569
7	0 8 35.50	2.2764	5 4 24.2	12.524
8	0 10 52.04	2.2750	5 16 54.8	12.477
9	0 13 8.50	2.2736	5 29 21.5	12.428
10	0 15 24.87	2.2722	5 41 45.7	12.378
11	0 17 41.16	2.2709	5 54 7.0	12.328
12	0 19 57.37	2.2696	6 6 25.2	12.276
13	0 22 13.51	2.2683	6 18 40.3	12.224
14	0 24 29.57	2.2670	6 30 52.1	12.171
15	0 26 45.56	2.2658	6 43 0.7	12.116
16	0 29 1.47	2.2647	6 55 6.0	12.060
17	0 31 17.32	2.2636	7 7 7.9	12.003
18	0 33 33.10	2.2625	7 19 6.2	11.943
19	0 35 48.82	2.2615	7 31 1.0	11.884
20	0 38 4.48	2.2604	7 42 52.3	11.824
21	0 40 20.08	2.2594	7 54 39.9	11.762
22	0 42 35.61	2.2584	8 6 23.7	11.699
23	0 44 51.09	2.2575	8 18 3.7	11.635
24	0 47 6.51	2.2566	N. 8 29 39.9	11.570

THURSDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 47 6.51	2.2566	N. 8 29 39.9	11.570
1	0 49 21.88	2.2557	8 41 12.2	11.505
2	0 51 37.20	2.2548	8 52 40.5	11.438
3	0 53 52.47	2.2540	9 4 4.7	11.370
4	0 56 7.68	2.2532	9 15 24.9	11.301
5	0 58 22.85	2.2525	9 26 40.9	11.232
6	1 0 37.98	2.2517	9 37 52.7	11.162
7	1 2 53.06	2.2510	9 49 0.2	11.090
8	1 5 8.10	2.2503	10 0 3.5	11.017
9	1 7 23.10	2.2497	10 11 2.4	10.944
10	1 9 38.06	2.2490	10 21 56.8	10.870
11	1 11 52.98	2.2484	10 32 46.8	10.796
12	1 14 7.86	2.2478	10 43 32.2	10.719
13	1 16 22.71	2.2472	10 54 13.1	10.643
14	1 18 37.52	2.2466	11 4 49.3	10.566
15	1 20 52.30	2.2461	11 15 20.9	10.487
16	1 23 7.05	2.2456	11 25 47.7	10.408
17	1 25 21.77	2.2451	11 36 9.8	10.328
18	1 27 36.46	2.2446	11 46 27.1	10.247
19	1 29 51.12	2.2441	11 56 39.5	10.166
20	1 32 5.75	2.2436	12 6 47.0	10.084
21	1 34 20.35	2.2432	12 16 49.6	10.001
22	1 36 34.93	2.2428	12 26 47.2	9.917
23	1 38 49.49	2.2424	N. 12 36 39.8	9.833

FRIDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 41 4.02	2.2420	N. 12 46 27.2	9.748
1	1 43 18.53	2.2417	12 56 9.5	9.662
2	1 45 33.02	2.2413	13 5 46.7	9.576
3	1 47 47.49	2.2410	13 15 18.7	9.489
4	1 50 1.94	2.2406	13 24 45.4	9.401
5	1 52 16.37	2.2403	13 34 6.8	9.313
6	1 54 30.78	2.2400	13 43 23.0	9.224
7	1 56 45.17	2.2397	13 52 33.8	9.134
8	1 58 59.55	2.2394	14 1 39.1	9.044
9	2 1 13.91	2.2392	14 10 39.0	8.953
10	2 3 28.25	2.2389	14 19 33.5	8.862
11	2 5 42.58	2.2387	14 28 22.5	8.770
12	2 7 56.89	2.2384	14 37 6.0	8.678
13	2 10 11.19	2.2382	14 45 43.9	8.585
14	2 12 25.47	2.2379	14 54 16.2	8.492
15	2 14 39.73	2.2376	15 2 42.9	8.398
16	2 16 53.98	2.2374	15 11 4.0	8.303
17	2 19 8.22	2.2372	15 19 19.4	8.208
18	2 21 22.44	2.2369	15 27 29.0	8.113
19	2 23 36.65	2.2367	15 35 32.9	8.017
20	2 25 50.84	2.2364	15 43 31.1	7.921
21	2 28 5.02	2.2362	15 51 23.5	7.824
22	2 30 19.19	2.2359	15 59 10.0	7.727
23	2 32 33.34	2.2357	16 6 50.7	7.629
24	2 34 47.48	2.2354	N. 16 14 25.5	7.531

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 34 47.48	2.2354	N.16 14 25.5	7.531
1	2 37 1.60	2.2352	16 21 54.4	7.433
2	2 39 15.71	2.2350	16 29 17.4	7.334
3	2 41 29.81	2.2348	16 36 34.4	7.234
4	2 43 43.89	2.2346	16 43 45.5	7.134
5	2 45 57.96	2.2343	16 50 50.6	7.034
6	2 48 12.01	2.2341	16 57 49.6	6.934
7	2 50 26.05	2.2338	17 4 42.6	6.833
8	2 52 40.07	2.2336	17 11 29.6	6.732
9	2 54 54.07	2.2333	17 18 10.5	6.631
10	2 57 8.06	2.2330	17 24 45.3	6.529
11	2 59 22.03	2.2327	17 31 14.0	6.427
12	3 1 35.98	2.2324	17 37 36.5	6.325
13	3 3 49.91	2.2321	17 43 52.9	6.222
14	3 6 3.83	2.2317	17 50 3.1	6.119
15	3 8 17.72	2.2313	17 56 7.1	6.016
16	3 10 31.59	2.2310	18 2 5.0	5.913
17	3 12 45.44	2.2306	18 7 56.7	5.809
18	3 14 59.27	2.2302	18 13 42.1	5.705
19	3 17 13.07	2.2298	18 19 21.3	5.601
20	3 19 26.85	2.2294	18 24 54.2	5.497
21	3 21 40.60	2.2290	18 30 20.8	5.392
22	3 23 54.33	2.2286	18 35 41.2	5.288
23	3 26 8.03	2.2282	N.18 40 55.3	5.183

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 28 21.71	2.2277	N.18 46 3.1	5.078
1	3 30 35.36	2.2272	18 51 4.6	4.973
2	3 32 48.97	2.2267	18 55 59.8	4.868
3	3 35 2.55	2.2261	19 0 48.7	4.762
4	3 37 16.10	2.2256	19 5 31.2	4.656
5	3 39 29.62	2.2250	19 10 7.4	4.550
6	3 41 43.10	2.2244	19 14 37.2	4.444
7	3 43 56.54	2.2238	19 19 0.6	4.338
8	3 46 9.95	2.2232	19 23 17.7	4.232
9	3 48 23.32	2.2225	19 27 28.4	4.126
10	3 50 36.65	2.2219	19 31 32.8	4.020
11	3 52 49.94	2.2212	19 35 30.8	3.913
12	3 55 3.19	2.2205	19 39 22.3	3.807
13	3 57 16.39	2.2197	19 43 7.5	3.700
14	3 59 29.55	2.2190	19 46 46.3	3.594
15	4 1 42.66	2.2182	19 50 18.7	3.487
16	4 3 55.73	2.2174	19 53 44.7	3.381
17	4 6 8.75	2.2165	19 57 4.3	3.274
18	4 8 21.71	2.2156	20 0 17.6	3.168
19	4 10 34.62	2.2147	20 3 24.5	3.061
20	4 12 47.48	2.2138	20 6 24.9	2.955
21	4 15 0.28	2.2129	20 9 18.9	2.848
22	4 17 13.03	2.2120	20 12 6.6	2.742
23	4 19 25.72	2.2110	20 14 47.9	2.636
24	4 21 38.35	2.2100	N.20 17 22.8	2.529

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 21 38.35	2.2100	N.20 17 22.8	2.529
1	4 23 50.92	2.2089	20 19 51.3	2.422
2	4 26 3.42	2.2078	20 22 13.5	2.316
3	4 28 15.86	2.2067	20 24 29.3	2.209
4	4 30 28.23	2.2056	20 26 38.6	2.103
5	4 32 40.53	2.2045	20 28 41.6	1.997
6	4 34 52.77	2.2033	20 30 38.3	1.891
7	4 37 4.93	2.2021	20 32 28.6	1.785
8	4 39 17.02	2.2009	20 34 12.5	1.679
9	4 41 29.03	2.1996	20 35 50.1	1.573
10	4 43 40.97	2.1983	20 37 21.3	1.468
11	4 45 52.83	2.1970	20 38 46.2	1.363
12	4 48 4.61	2.1957	20 40 4.8	1.258
13	4 50 16.31	2.1943	20 41 17.1	1.153
14	4 52 27.93	2.1929	20 42 23.1	1.048
15	4 54 39.46	2.1915	20 43 22.8	0.943
16	4 56 50.91	2.1901	20 44 16.2	0.838
17	4 59 2.27	2.1886	20 45 3.3	0.734
18	5 1 13.54	2.1871	20 45 44.2	0.630
19	5 3 24.72	2.1856	20 46 18.9	0.526
20	5 5 35.81	2.1840	20 46 47.3	0.422
21	5 7 46.80	2.1824	20 47 9.5	0.318
22	5 9 57.70	2.1808	20 47 25.5	0.215
23	5 12 8.50	2.1792	N.20 47 35.3	0.112

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 14 19.21	2.1775	N.20 47 38.9	0.009
1	5 16 29.81	2.1758	20 47 36.3	0.094
2	5 18 40.31	2.1741	20 47 27.6	0.196
3	5 20 50.71	2.1724	20 47 12.8	0.298
4	5 23 1.00	2.1706	20 46 51.8	0.400
5	5 25 11.18	2.1688	20 46 24.7	0.502
6	5 27 21.26	2.1670	20 45 51.5	0.604
7	5 29 31.23	2.1652	20 45 12.2	0.705
8	5 31 41.09	2.1633	20 44 26.9	0.806
9	5 33 50.83	2.1614	20 43 35.5	0.907
10	5 36 0.46	2.1595	20 42 38.1	1.007
11	5 38 9.97	2.1576	20 41 34.7	1.107
12	5 40 19.37	2.1556	20 40 25.3	1.206
13	5 42 28.65	2.1536	20 39 10.0	1.305
14	5 44 37.80	2.1516	20 37 48.7	1.404
15	5 46 46.83	2.1496	20 36 21.5	1.503
16	5 48 55.75	2.1475	20 34 48.3	1.601
17	5 51 4.54	2.1454	20 33 9.3	1.699
18	5 53 13.20	2.1433	20 31 24.4	1.796
19	5 55 21.73	2.1412	20 29 33.7	1.893
20	5 57 30.14	2.1391	20 27 37.2	1.990
21	5 59 38.42	2.1369	20 25 34.9	2.087
22	6 1 46.57	2.1347	20 23 26.8	2.183
23	6 3 54.59	2.1325	20 21 13.0	2.278
24	6 6 2.47	2.1303	N.20 18 53.4	2.373

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 17.					FRIDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 6 2.47	2.1303	N.20 18 53.4	2.373	0	7 45 29.33	2.0110	N.16 43 30.2	6.411
1	6 8 10.22	2.1281	20 16 28.1	2.468	1	7 47 29.91	2.0084	16 37 3.4	6.482
2	6 10 17.84	2.1258	20 13 57.1	2.563	2	7 49 30.34	2.0059	16 30 32.3	6.553
3	6 12 25.32	2.1235	20 11 20.5	2.657	3	7 51 30.62	2.0034	16 23 57.0	6.623
4	6 14 32.66	2.1212	20 8 38.2	2.751	4	7 53 30.75	2.0009	16 17 17.5	6.693
5	6 16 39.86	2.1189	20 5 50.3	2.845	5	7 55 30.73	1.9984	16 10 33.8	6.762
6	6 18 46.93	2.1166	20 2 56.8	2.938	6	7 57 30.56	1.9959	16 3 46.0	6.830
7	6 20 53.86	2.1142	19 59 57.7	3.031	7	7 59 30.24	1.9934	15 56 54.1	6.898
8	6 23 0.64	2.1119	19 56 53.1	3.123	8	8 1 29.77	1.9909	15 49 58.2	6.966
9	6 25 7.28	2.1095	19 53 43.0	3.214	9	8 3 29.15	1.9885	15 42 58.2	7.033
10	6 27 13.78	2.1071	19 50 27.4	3.306	10	8 5 28.39	1.9860	15 35 54.2	7.099
11	6 29 20.14	2.1047	19 47 6.3	3.397	11	8 7 27.48	1.9836	15 28 46.3	7.165
12	6 31 26.35	2.1023	19 43 39.8	3.487	12	8 9 26.43	1.9812	15 21 34.4	7.230
13	6 33 32.42	2.0999	19 40 7.9	3.577	13	8 11 25.23	1.9788	15 14 18.6	7.295
14	6 35 38.34	2.0975	19 36 30.5	3.666	14	8 13 23.89	1.9764	15 6 59.0	7.359
15	6 37 44.11	2.0950	19 32 47.8	3.755	15	8 15 22.41	1.9741	14 59 35.6	7.422
16	6 39 49.74	2.0925	19 28 59.9	3.844	16	8 17 20.78	1.9717	14 52 8.4	7.485
17	6 41 55.22	2.0900	19 25 6.7	3.932	17	8 19 19.01	1.9694	14 44 37.5	7.547
18	6 44 0.54	2.0876	19 21 8.1	4.019	18	8 21 17.11	1.9670	14 37 2.8	7.608
19	6 46 5.72	2.0851	19 17 4.3	4.106	19	8 23 15.07	1.9647	14 29 24.4	7.669
20	6 48 10.75	2.0826	19 12 55.3	4.193	20	8 25 12.88	1.9624	14 21 42.5	7.729
21	6 50 15.63	2.0800	19 8 41.2	4.279	21	8 27 10.56	1.9602	14 13 57.0	7.789
22	6 52 20.35	2.0775	19 4 21.9	4.364	22	8 29 8.11	1.9579	14 6 7.8	7.848
23	6 54 24.92	2.0750	N.18 59 57.5	4.449	23	8 31 5.52	1.9557	N.13 58 15.1	7.907
	THURSDAY 18.					SATURDAY 20.			
0	6 56 29.35	2.0725	N.18 55 28.0	4.534	0	8 33 2.80	1.9535	N.13 50 19.0	7.965
1	6 58 33.62	2.0699	18 50 53.4	4.618	1	8 34 59.95	1.9513	13 42 19.4	8.023
2	7 0 37.74	2.0674	18 46 13.8	4.702	2	8 36 56.96	1.9492	13 34 16.3	8.079
3	7 2 41.70	2.0648	18 41 29.2	4.786	3	8 38 53.85	1.9471	13 26 9.9	8.135
4	7 4 45.51	2.0623	18 36 39.5	4.868	4	8 40 50.61	1.9450	13 18 0.1	8.191
5	7 6 49.17	2.0597	18 31 44.9	4.950	5	8 42 47.24	1.9428	13 9 47.0	8.246
6	7 8 52.67	2.0571	18 26 45.5	5.032	6	8 44 43.74	1.9407	13 1 30.6	8.300
7	7 10 56.02	2.0545	18 21 41.2	5.113	7	8 46 40.12	1.9386	12 53 11.0	8.354
8	7 12 59.21	2.0520	18 16 31.9	5.194	8	8 48 36.37	1.9365	12 44 48.1	8.407
9	7 15 2.25	2.0494	18 11 17.8	5.274	9	8 50 32.50	1.9345	12 36 22.1	8.460
10	7 17 5.14	2.0468	18 5 59.0	5.354	10	8 52 28.51	1.9325	12 27 52.9	8.512
11	7 19 7.87	2.0442	18 0 35.4	5.433	11	8 54 24.40	1.9305	12 19 20.7	8.563
12	7 21 10.44	2.0417	17 55 7.1	5.511	12	8 56 20.17	1.9285	12 10 45.4	8.613
13	7 23 12.86	2.0391	17 49 34.1	5.589	13	8 58 15.83	1.9266	12 2 7.1	8.663
14	7 25 15.13	2.0365	17 43 56.4	5.667	14	9 0 11.37	1.9247	11 53 25.8	8.713
15	7 27 17.24	2.0339	17 38 14.1	5.744	15	9 2 6.79	1.9228	11 44 41.5	8.762
16	7 29 19.20	2.0314	17 32 27.1	5.820	16	9 4 2.11	1.9210	11 35 54.3	8.810
17	7 31 21.00	2.0288	17 26 35.6	5.896	17	9 5 57.32	1.9192	11 27 4.3	8.858
18	7 33 22.65	2.0263	17 20 39.6	5.971	18	9 7 52.42	1.9174	11 18 11.4	8.905
19	7 35 24.15	2.0237	17 14 39.1	6.046	19	9 9 47.41	1.9157	11 9 15.7	8.952
20	7 37 25.49	2.0211	17 8 34.1	6.120	20	9 11 42.30	1.9139	11 0 17.2	8.998
21	7 39 26.68	2.0185	17 2 24.7	6.193	21	9 13 37.09	1.9122	10 51 16.0	9.043
22	7 41 27.71	2.0160	16 56 10.9	6.266	22	9 15 31.77	1.9105	10 42 12.1	9.087
23	7 43 28.59	2.0135	16 49 52.7	6.339	23	9 17 26.35	1.9088	10 33 5.6	9.131
24	7 45 29.33	2.0110	N.16 43 30.2	6.411	24	9 19 20.83	1.9072	N.10 23 56.4	9.174

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 21.					TUESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 19 20.83	1.9072	N.10 23 56.4	9.174	0	10 49 38.79	1.8691	N. 2 25 32.1	10.516
1	9 21 15.21	1.9056	10 14 44.7	9.217	1	10 51 30.94	1.8692	2 15 0.8	10.528
2	9 23 9.50	1.9041	10 5 30.4	9.259	2	10 53 23.10	1.8694	2 4 28.8	10.540
3	9 25 3.70	1.9026	9 56 13.6	9.301	3	10 55 15.27	1.8697	1 53 56.1	10.551
4	9 26 57.81	1.9011	9 46 54.3	9.342	4	10 57 7.46	1.8700	1 43 22.7	10.561
5	9 28 51.83	1.8996	9 37 32.6	9.382	5	10 58 59.67	1.8703	1 32 48.8	10.571
6	9 30 45.76	1.8981	9 28 8.5	9.422	6	11 0 51.89	1.8706	1 22 14.3	10.580
7	9 32 39.60	1.8967	9 18 42.0	9.461	7	11 2 44.14	1.8710	1 11 39.3	10.588
8	9 34 33.36	1.8953	9 9 13.2	9.499	8	11 4 36.41	1.8714	1 1 3.8	10.595
9	9 36 27.04	1.8940	8 59 42.1	9.537	9	11 6 28.71	1.8719	0 50 27.9	10.602
10	9 38 20.64	1.8927	8 50 8.8	9.574	10	11 8 21.04	1.8724	0 39 51.6	10.608
11	9 40 14.16	1.8914	8 40 33.3	9.610	11	11 10 13.40	1.8729	0 29 15.0	10.613
12	9 42 7.61	1.8901	8 30 55.6	9.646	12	11 12 5.79	1.8735	0 18 38.0	10.618
13	9 44 0.98	1.8889	8 21 15.8	9.681	13	11 13 58.22	1.8742	N. 0 8 0.8	10.622
14	9 45 54.28	1.8877	8 11 33.9	9.716	14	11 15 50.69	1.8749	S. 0 2 36.7	10.626
15	9 47 47.51	1.8865	8 1 49.9	9.750	15	11 17 43.20	1.8756	0 13 14.4	10.630
16	9 49 40.67	1.8854	7 52 3.9	9.783	16	11 19 35.76	1.8764	0 23 52.3	10.632
17	9 51 33.76	1.8843	7 42 15.9	9.816	17	11 21 28.37	1.8772	0 34 30.3	10.634
18	9 53 26.79	1.8833	7 32 26.0	9.848	18	11 23 21.02	1.8780	0 45 8.4	10.635
19	9 55 19.76	1.8823	7 22 34.2	9.880	19	11 25 13.72	1.8789	0 55 46.5	10.635
20	9 57 12.67	1.8813	7 12 40.4	9.911	20	11 27 6.49	1.8798	1 6 24.6	10.635
21	9 59 5.52	1.8804	7 2 44.8	9.941	21	11 28 59.31	1.8808	1 17 2.7	10.634
22	10 0 58.32	1.8795	6 52 47.5	9.970	22	11 30 52.19	1.8819	1 27 40.7	10.632
23	10 2 51.06	1.8786	N. 6 42 48.4	9.999	23	11 32 45.14	1.8830	S. 1 38 18.6	10.629
	MONDAY 22.					WEDNESDAY 24.			
0	10 4 43.75	1.8777	N. 6 32 47.6	10.027	0	11 34 38.15	1.8841	S. 1 48 56.3	10.626
1	10 6 36.39	1.8769	6 22 45.1	10.055	1	11 36 31.23	1.8852	1 59 33.7	10.622
2	10 8 28.98	1.8762	6 12 41.0	10.082	2	11 38 24.38	1.8864	2 10 10.9	10.618
3	10 10 21.53	1.8755	6 2 35.3	10.109	3	11 40 17.61	1.8877	2 20 47.8	10.613
4	10 12 14.04	1.8748	5 52 27.9	10.135	4	11 42 10.91	1.8890	2 31 24.4	10.607
5	10 14 6.51	1.8742	5 42 19.0	10.160	5	11 44 4.29	1.8904	2 42 0.7	10.601
6	10 15 58.94	1.8735	5 32 8.7	10.184	6	11 45 57.76	1.8918	2 52 36.5	10.593
7	10 17 51.33	1.8729	5 21 57.0	10.208	7	11 47 51.31	1.8932	3 3 11.8	10.585
8	10 19 43.69	1.8724	5 11 43.8	10.231	8	11 49 44.94	1.8947	3 13 46.7	10.576
9	10 21 36.02	1.8719	5 1 29.2	10.254	9	11 51 38.66	1.8962	3 24 21.0	10.567
10	10 23 28.32	1.8714	4 51 13.3	10.276	10	11 53 32.48	1.8978	3 34 54.7	10.557
11	10 25 20.59	1.8710	4 40 56.1	10.297	11	11 55 26.40	1.8994	3 45 27.8	10.547
12	10 27 12.84	1.8706	4 30 37.7	10.318	12	11 57 20.41	1.9010	3 56 0.3	10.536
13	10 29 5.06	1.8703	4 20 18.1	10.338	13	11 59 14.52	1.9027	4 6 32.0	10.523
14	10 30 57.27	1.8700	4 9 57.2	10.357	14	12 1 8.73	1.9044	4 17 3.0	10.510
15	10 32 49.46	1.8697	3 59 35.2	10.376	15	12 3 3.05	1.9062	4 27 33.2	10.497
16	10 34 41.64	1.8695	3 49 12.1	10.394	16	12 4 57.48	1.9080	4 38 2.6	10.483
17	10 36 33.81	1.8693	3 38 47.9	10.412	17	12 6 52.02	1.9099	4 48 31.1	10.468
18	10 38 25.96	1.8691	3 28 22.7	10.429	18	12 8 46.67	1.9118	4 58 58.7	10.452
19	10 40 18.10	1.8690	3 17 56.5	10.445	19	12 10 41.44	1.9137	5 9 25.3	10.435
20	10 42 10.24	1.8689	3 7 29.4	10.460	20	12 12 36.32	1.9157	5 19 50.9	10.418
21	10 44 2.37	1.8689	2 57 1.4	10.475	21	12 14 31.33	1.9178	5 30 15.4	10.400
22	10 45 54.51	1.8689	2 46 32.4	10.489	22	12 16 26.46	1.9199	5 40 38.9	10.381
23	10 47 46.65	1.8690	2 36 2.6	10.503	23	12 18 21.72	1.9220	5 51 1.3	10.362
24	10 49 38.79	1.8691	N. 2 25 32.1	10.516	24	12 20 17.10	1.9242	S. 6 1 22.4	10.342

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 20 17.10	1.9242	S. 6 1 22.4	10.342
1	12 22 12.62	1.9264	6 11 42.3	10.321
2	12 24 8.27	1.9287	6 22 0.9	10.299
3	12 26 4.06	1.9311	6 32 18.2	10.277
4	12 28 0.00	1.9334	6 42 34.2	10.254
5	12 29 56.07	1.9358	6 52 48.8	10.231
6	12 31 52.29	1.9383	7 3 1.9	10.206
7	12 33 48.66	1.9408	7 13 13.5	10.181
8	12 35 45.18	1.9433	7 23 23.6	10.155
9	12 37 41.85	1.9459	7 33 32.1	10.128
10	12 39 38.68	1.9485	7 43 39.0	10.100
11	12 41 35.67	1.9511	7 53 44.2	10.072
12	12 43 32.81	1.9538	8 3 47.6	10.043
13	12 45 30.12	1.9565	8 13 49.3	10.013
14	12 47 27.59	1.9593	8 23 49.2	9.983
15	12 49 25.23	1.9622	8 33 47.3	9.952
16	12 51 23.05	1.9650	8 43 43.4	9.920
17	12 53 21.04	1.9679	8 53 37.6	9.887
18	12 55 19.20	1.9709	9 3 29.8	9.853
19	12 57 17.54	1.9739	9 13 20.0	9.818
20	12 59 16.07	1.9769	9 23 8.0	9.783
21	13 1 14.78	1.9800	9 32 53.9	9.747
22	13 3 13.67	1.9831	9 42 37.7	9.710
23	13 5 12.75	1.9863	S. 9 52 19.2	9.673

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 7 12.03	1.9895	S. 10 1 58.4	9.635
1	13 9 11.50	1.9927	10 11 35.3	9.595
2	13 11 11.16	1.9959	10 21 9.8	9.555
3	13 13 11.02	1.9992	10 30 41.9	9.515
4	13 15 11.07	2.0026	10 40 11.6	9.474
5	13 17 11.33	2.0060	10 49 38.7	9.431
6	13 19 11.79	2.0095	10 59 3.3	9.387
7	13 21 12.46	2.0130	11 8 25.2	9.343
8	13 23 13.35	2.0165	11 17 44.5	9.298
9	13 25 14.45	2.0200	11 27 1.0	9.252
10	13 27 15.75	2.0236	11 36 14.8	9.206
11	13 29 17.27	2.0272	11 45 25.8	9.159
12	13 31 19.01	2.0309	11 54 33.9	9.111
13	13 33 20.97	2.0346	12 3 39.1	9.062
14	13 35 23.16	2.0383	12 12 41.3	9.012
15	13 37 25.57	2.0420	12 21 40.5	8.962
16	13 39 28.20	2.0458	12 30 36.7	8.911
17	13 41 31.06	2.0496	12 39 29.7	8.858
18	13 43 34.15	2.0535	12 48 19.6	8.805
19	13 45 37.48	2.0574	12 57 6.3	8.751
20	13 47 41.04	2.0613	13 5 49.7	8.696
21	13 49 44.83	2.0652	13 14 29.8	8.640
22	13 51 48.87	2.0692	13 23 6.5	8.583
23	13 53 53.15	2.0733	13 31 39.8	8.526
24	13 55 57.67	2.0773	S. 13 40 9.6	8.468

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 55 57.67	2.0773	S. 13 40 9.6	8.468
1	13 58 2.43	2.0814	13 48 35.9	8.408
2	14 0 7.44	2.0855	13 56 58.6	8.348
3	14 2 12.70	2.0897	14 5 17.7	8.287
4	14 4 18.20	2.0938	14 13 33.1	8.225
5	14 6 23.95	2.0980	14 21 44.8	8.163
6	14 8 29.96	2.1022	14 29 52.7	8.100
7	14 10 36.22	2.1065	14 37 56.8	8.036
8	14 12 42.74	2.1108	14 45 56.9	7.969
9	14 14 49.52	2.1151	14 53 53.1	7.903
10	14 16 56.55	2.1194	15 1 45.3	7.836
11	14 19 3.84	2.1237	15 9 33.5	7.768
12	14 21 11.39	2.1280	15 17 17.6	7.699
13	14 23 19.20	2.1324	15 24 57.5	7.630
14	14 25 27.28	2.1368	15 32 33.2	7.560
15	14 27 35.62	2.1412	15 40 4.6	7.488
16	14 29 44.23	2.1456	15 47 31.8	7.416
17	14 31 53.11	2.1501	15 54 54.6	7.343
18	14 34 2.25	2.1546	16 2 12.9	7.269
19	14 36 11.66	2.1591	16 9 26.8	7.194
20	14 38 21.34	2.1636	16 16 36.2	7.118
21	14 40 31.29	2.1681	16 23 41.0	7.041
22	14 42 41.51	2.1726	16 30 41.1	6.963
23	14 44 52.00	2.1772	S. 16 37 36.5	6.884

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 47 2.77	2.1817	S. 16 44 27.2	6.804
1	14 49 13.81	2.1863	16 51 13.1	6.724
2	14 51 25.13	2.1908	16 57 54.1	6.643
3	14 53 36.72	2.1954	17 4 30.2	6.560
4	14 55 48.58	2.2000	17 11 1.3	6.477
5	14 58 0.72	2.2046	17 17 27.4	6.393
6	15 0 13.14	2.2092	17 23 48.5	6.308
7	15 2 25.84	2.2139	17 30 4.4	6.222
8	15 4 38.81	2.2185	17 36 15.1	6.135
9	15 6 52.06	2.2231	17 42 20.6	6.048
10	15 9 5.58	2.2277	17 48 20.8	5.960
11	15 11 19.38	2.2323	17 54 15.7	5.870
12	15 13 33.46	2.2369	18 0 5.2	5.779
13	15 15 47.81	2.2415	18 5 49.3	5.688
14	15 18 2.44	2.2461	18 11 27.8	5.596
15	15 20 17.35	2.2507	18 17 0.7	5.503
16	15 22 32.53	2.2553	18 22 28.1	5.409
17	15 24 47.99	2.2599	18 27 49.8	5.314
18	15 27 3.72	2.2645	18 33 5.8	5.218
19	15 29 19.73	2.2691	18 38 16.0	5.122
20	15 31 36.01	2.2737	18 43 20.4	5.026
21	15 33 52.56	2.2782	18 48 19.0	4.927
22	15 36 9.39	2.2827	18 53 11.6	4.828
23	15 38 26.49	2.2872	18 57 58.2	4.727
24	15 40 43.85	2.2918	S. 19 2 38.8	4.626

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 40 43.85	2.2918	S.19 2 38.8	4.626
1	15 43 1.49	2.2963	19 7 13.3	4.524
2	15 45 19.40	2.3007	19 11 41.7	4.421
3	15 47 37.57	2.3051	19 16 3.9	4.318
4	15 49 56.01	2.3095	19 20 19.8	4.214
5	15 52 14.71	2.3139	19 24 29.4	4.108
6	15 54 33.68	2.3183	19 28 32.8	4.002
7	15 56 52.91	2.3227	19 32 29.8	3.896
8	15 59 12.41	2.3271	19 36 20.3	3.788
9	16 1 32.17	2.3314	19 40 4.4	3.680
10	16 3 52.18	2.3357	19 43 41.9	3.571
11	16 6 12.45	2.3399	19 47 12.9	3.461
12	16 8 32.97	2.3441	19 50 37.2	3.350
13	16 10 53.74	2.3483	19 53 54.9	3.238
14	16 13 14.77	2.3525	19 57 5.8	3.125
15	16 15 36.04	2.3566	20 0 9.9	3.012
16	16 17 57.56	2.3607	20 3 7.3	2.898
17	16 20 19.32	2.3648	20 5 57.8	2.783
18	16 22 41.33	2.3688	20 8 41.3	2.668
19	16 25 3.58	2.3728	20 11 17.9	2.552
20	16 27 26.06	2.3767	20 13 47.6	2.435
21	16 29 48.78	2.3806	20 16 10.2	2.318
22	16 32 11.73	2.3844	20 18 25.7	2.200
23	16 34 34.91	2.3882	S.20 20 34.1	2.081

TUESDAY, MARCH 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 36 58.31	2.3920	S.20 22 35.4	1.961

PHASES OF THE MOON.

		d	h	m
●	New Moon, . .	7	6	9.8
☽	First Quarter, . .	14	1	24.1
○	Full Moon, . . .	22	5	0.9

		d	h
☾	Perigee, ...	7	2.4
☾	Apogee, ...	20	9.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Regulus W.	79° 51′ 32″	2621	81° 29′ 58″	2604	83° 8′ 48″	2586	84° 48′ 2″	2568
	Saturn W.	29 54 22	2675	31 31 35	2652	33 9 19	2629	34 47·35	2606
	Spica W.	25 53 12	2601	27 32 5	2585	29 11 21	2567	30 51 1	2549
	Venus E.	43 23 16	3014	41 53 20	2995	40 23 1	2976	38 52 18	2957
	Mars E.	45 26 4	2866	43 53 2	2848	42 19 37	2831	40 45 50	2815
	Sun E.	84 8 46	2965	82 37 50	2947	81 6 31	2929	79 34 49	2909
2	Regulus W.	93 10 25	2477	94 52 10	2460	96 34 20	2441	98 16 57	2422
	Saturn W.	43 6 37	2497	44 47 55	2475	46 29 43	2455	48 12 0	2434
	Spica W.	39 15 37	2458	40 57 49	2441	42 40 27	2421	44 23 32	2403
	Venus E.	31 12 41	2861	29 39 32	2842	28 5 58	2822	26 31 59	2804
	Mars E.	32 51 24	2730	31 15 24	2714	29 39 3	2698	28 2 21	2684
	Sun E.	71 50 9	2813	70 15 58	2793	68 41 21	2774	67 6 19	2754
3	Saturn W.	56 50 38	2335	58 35 47	2315	60 21 24	2296	62 7 29	2278
	Spica W.	53 5 34	2311	54 51 18	2292	56 37 29	2274	58 24 6	2256
	Jupiter W.	19 35 36	2349	21 20 24	2330	23 5 40	2311	24 51 23	2294
	Sun E.	59 4 42	2658	57 27 6	2639	55 49 4	2621	54 10 38	2603
4	Saturn W.	71 4 37	2190	72 53 20	2173	74 42 28	2157	76 32 0	2141
	Spica W.	67 23 41	2172	69 12 51	2155	71 2 26	2140	72 52 24	2125
	Jupiter W.	33 46 34	2206	35 34 53	2189	37 23 37	2174	39 12 44	2156
	Sun E.	45 52 26	2519	44 11 39	2504	42 30 32	2489	40 49 4	2476
5	Saturn W.	85 45 21	2072	87 37 3	2060	89 29 4	2048	91 21 23	2036
	Spica W.	82 7 47	2057	83 59 53	2044	85 52 18	2033	87 45 0	2023
	Jupiter W.	48 23 59	2088	50 15 16	2076	52 6 52	2064	53 58 46	2053
	Sun E.	32 17 25	2424	30 34 24	2418	28 51 15	2413	27 7 59	2411
9	Sun W.	25 14 10	2439	26 56 49	2441	28 39 25	2446	30 21 54	2454
	α Arietis E.	50 41 39	2128	48 51 22	2145	47 1 31	2163	45 12 7	2182
	Aldebaran E.	83 30 40	2059	81 38 37	2070	79 46 52	2083	77 55 27	2096
10	Sun W.	38 50 53	2513	40 31 48	2527	42 12 23	2543	43 52 36	2560
	Aldebaran E.	68 43 49	2172	66 54 40	2189	65 5 56	2206	63 17 37	2224
	Pollux E.	110 53 52	2250	109 6 39	2264	107 19 46	2279	105 33 15	2294
11	Sun W.	52 7 52	2648	53 45 42	2667	55 23 6	2686	57 0 5	2705
	Aldebaran E.	54 22 45	2316	52 37 9	2335	50 52 1	2355	49 7 21	2375
	Pollux E.	96 46 33	2379	95 2 28	2396	93 18 48	2415	91 35 35	2433
12	Sun W.	64 58 29	2805	66 32 51	2824	68 6 48	2844	69 40 19	2864
	α Pegasi W.	39 36 30	2825	41 10 26	2819	42 44 29	2816	44 18 36	2815
	Aldebaran E.	40 31 16	2477	38 49 30	2498	37 8 14	2519	35 27 27	2541
	Pollux E.	83 6 10	2530	81 25 38	2550	79 45 34	2569	78 5 57	2589
13	Sun W.	77 21 33	2962	78 52 34	2981	80 23 11	3000	81 53 24	3018
	α Pegasi W.	52 8 36	2837	53 42 16	2845	55 15 45	2854	56 49 3	2863
	Pollux E.	69 54 38	2689	68 17 43	2709	66 41 15	2729	65 5 13	2748
	Regulus E.	106 28 47	2618	104 50 17	2635	103 12 10	2653	101 34 27	2670
14	Sun W.	89 18 51	3107	90 46 52	3124	92 14 32	3141	93 41 52	3158
	α Pegasi W.	64 32 25	2915	66 4 25	2927	67 36 10	2938	69 7 41	2949
	Pollux E.	57 11 36	2848	55 38 11	2868	54 5 11	2888	52 32 37	2909
	Regulus E.	93 31 31	2752	91 56 0	2768	90 20 50	2782	88 45 59	2798

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Regulus	W.	86° 27′ 41″	2550	88° 7′ 45″	2533	89° 48′ 13″	2515	91° 29′ 6″	2496
	Saturn	W.	36 26 22	2583	38 5 40	2561	39 45 29	2539	41 25 48	2517
	Spica	W.	32 31 6	2531	34 11 36	2513	35 52 31	2495	37 33 51	2477
	Venus	E.	37 21 11	2938	35 49 40	2919	34 17 45	2899	32 45 25	2880
	Mars	E.	39 11 42	2798	37 37 11	2781	36 2 18	2763	34 27 2	2747
	Sun	E.	78 2 42	2891	76 30 11	2871	74 57 15	2852	73 23 55	2832
2	Regulus	W.	100 0 0	2404	101 43 29	2386	103 27 24	2368	105 11 45	2350
	Saturn	W.	49 54 46	2414	51 38 1	2394	53 21 45	2374	55 5 57	2354
	Spica	W.	46 7 3	2384	47 51 1	2366	49 35 25	2347	51 20 16	2328
	Venus	E.	24 57 36	2785	23 22 48	2766	21 47 36	2748	20 12 0	2731
	Mars	E.	26 25 20	2670	24 48 0	2658	23 10 24	2647	21 32 33	2637
	Sun	E.	65 30 51	2735	63 54 57	2716	62 18 38	2696	60 41 53	2677
3	Saturn	W.	63 54 1	2259	65 41 1	2241	67 28 27	2224	69 16 19	2206
	Spica	W.	60 11 10	2239	61 58 40	2222	63 46 35	2206	65 34 55	2188
	Jupiter	W.	26 37 32	2275	28 24 8	2257	30 11 11	2239	31 58 40	2223
	Sun	E.	52 31 47	2585	50 52 32	2568	49 12 53	2551	47 32 51	2535
4	Saturn	W.	78 21 56	2126	80 12 15	2112	82 2 56	2098	83 53 58	2085
	Spica	W.	74 42 45	2110	76 33 29	2096	78 24 34	2083	80 16 0	2069
	Jupiter	W.	41 2 15	2143	42 52 8	2128	44 42 24	2115	46 33 1	2101
	Sun	E.	39 7 17	2463	37 25 12	2452	35 42 51	2441	34 0 15	2431
5	Saturn	W.	93 13 58	2028	95 6 49	2018	96 59 55	2010	98 53 14	2003
	Spica	W.	89 37 59	2012	91 31 14	2003	93 24 43	1994	95 18 26	1987
	Jupiter	W.	55 50 57	2043	57 43 24	2033	59 36 6	2025	61 29 1	2017
	Sun	E.	25 24 40	2411	23 41 21	2417	21 58 10	2427	20 15 14	2442
9	Sun	W.	32 4 12	2464	33 46 16	2474	35 28 6	2486	37 9 39	2499
	a Arietis	E.	43 23 13	2208	41 34 50	2226	39 47 0	2249	37 59 46	2275
	Aldebaran	E.	76 4 22	2111	74 13 39	2126	72 23 19	2141	70 33 22	2157
10	Sun	W.	45 32 26	2577	47 11 53	2593	48 50 57	2611	50 29 37	2629
	Aldebaran	E.	61 29 45	2241	59 42 19	2260	57 55 20	2279	56 8 49	2297
	Pollux	E.	103 47 6	2810	102 1 21	2826	100 16 0	2844	98 31 4	2861
11	Sun	W.	58 36 38	2725	60 12 45	2744	61 48 26	2764	63 23 41	2785
	Aldebaran	E.	47 23 10	2395	45 39 28	2415	43 56 15	2436	42 13 31	2456
	Pollux	E.	89 52 48	2453	88 10 28	2472	86 28 35	2491	84 47 9	2510
12	Sun	W.	71 13 24	2883	72 46 4	2904	74 18 18	2923	75 50 8	2942
	a Pegasi	W.	45 52 44	2817	47 26 50	2820	49 0 52	2825	50 34 48	2831
	Aldebaran	E.	33 47 11	2563	32 7 25	2585	30 28 10	2607	28 49 26	2632
	Pollux	E.	76 26 47	2609	74 48 4	2629	73 9 49	2649	71 32 0	2669
13	Sun	W.	83 23 14	3037	84 52 41	3055	86 21 46	3073	87 50 29	3090
	a Pegasi	W.	58 22 9	2873	59 55 3	2883	61 27 44	2894	63 0 11	2904
	Pollux	E.	63 29 37	2768	61 54 27	2788	60 19 44	2808	58 45 27	2828
	Regulus	E.	99 57 7	2687	98 20 10	2704	96 43 35	2720	95 7 22	2737
14	Sun	W.	95 8 52	3173	96 35 34	3188	98 1 57	3204	99 28 2	3219
	a Pegasi	W.	70 38 58	2960	72 10 1	2971	73 40 50	2983	75 11 24	2993
	Pollux	E.	51 0 30	2929	49 28 48	2950	47 57 33	2972	46 26 45	2993
	Regulus	E.	87 11 28	2812	85 37 16	2827	84 3 23	2841	82 29 48	2855

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Sun	W.	100° 53′ 49″	3233	102° 19′ 19″	3247	103° 44′ 32″	3261	105° 9′ 29″	3275
	a Pegasi	W.	76 41 45	3005	78 11 52	3016	79 41 45	3026	81 11 25	3038
	a Arietis	W.	33 3 44	3004	34 33 52	3005	36 3 59	3006	37 34 4	3009
	Pollux	E.	44 56 23	3014	43 26 28	3038	41 57 2	3061	40 28 5	3085
	Regulus	E.	80 56 31	2868	79 23 31	2880	77 50 47	2894	76 18 20	2906
16	Sun	W.	112 10 34	3334	113 34 6	3345	114 57 25	3356	116 20 32	3365
	a Pegasi	W.	88 36 28	3089	90 4 51	3098	91 33 3	3107	93 1 4	3117
	a Arietis	W.	45 3 19	3031	46 32 53	3036	48 2 21	3042	49 31 42	3047
	Regulus	E.	68 39 47	2962	67 8 46	2972	65 37 58	2981	64 7 22	2991
	Saturn	E.	118 27 37	2953	116 56 25	2961	115 25 23	2969	113 54 31	2977
	Spica	E.	122 28 56	2939	120 57 27	2948	119 26 9	2958	117 55 3	2967
17	Sun	W.	123 13 23	3411	124 35 27	3419	125 57 22	3426	127 19 9	3434
	a Pegasi	W.	100 18 20	3161	101 45 16	3170	103 12 1	3178	104 38 36	3186
	a Arietis	W.	56 56 54	3072	58 25 38	3076	59 54 17	3080	61 22 51	3085
	Aldebaran	W.	23 34 16	3073	25 2 59	3073	26 31 42	3073	28 0 24	3074
	Regulus	E.	56 37 12	3034	55 7 41	3042	53 38 20	3049	52 9 8	3056
	Saturn	E.	106 22 41	3014	104 52 45	3020	103 22 57	3026	101 53 17	3031
	Spica	E.	110 22 11	3005	108 52 4	3012	107 22 6	3018	105 52 16	3024
18	*a* Pegasi	W.	111 49 11	3225	113 14 50	3234	114 40 19	3242	116 5 39	3250
	a Arietis	W.	68 44 26	3102	70 12 33	3105	71 40 36	3108	73 8 36	3110
	Aldebaran	W.	35 23 36	3081	36 52 9	3083	38 20 39	3085	39 49 7	3086
	Regulus	E.	44 45 15	3089	43 16 52	3095	41 48 36	3101	40 20 28	3108
	Saturn	E.	94 26 29	3055	92 57 24	3059	91 28 24	3062	89 59 28	3065
	Spica	E.	98 24 46	3048	96 55 33	3052	95 26 25	3056	93 57 21	3059
19	*a* Arietis	W.	80 27 55	3119	81 55 41	3121	83 23 25	3122	84 51 8	3123
	Aldebaran	W.	47 11 6	3091	48 39 26	3091	50 7 46	3092	51 36 5	3093
	Regulus	E.	33 1 44	3140	31 34 23	3148	30 7 12	3156	28 40 10	3165
	Saturn	E.	82 35 39	3077	81 7 1	3079	79 38 26	3080	78 9 52	3082
	Spica	E.	86 32 55	3071	85 4 10	3073	83 35 27	3074	82 6 46	3075
20	*a* Arietis	W.	92 9 32	3124	93 37 12	3124	95 4 52	3124	96 32 32	3124
	Aldebaran	W.	58 57 37	3091	60 25 57	3091	61 54 18	3090	63 22 40	3089
	Saturn	E.	70 47 20	3084	69 18 51	3084	67 50 22	3084	66 21 53	3084
	Spica	E.	74 43 32	3077	73 14 54	3076	71 46 15	3076	70 17 36	3075
	Jupiter	E.	109 45 37	3101	108 17 29	3101	106 49 20	3101	105 21 11	3099
	Antares	E.	120 5 3	3106	118 37 1	3105	117 8 58	3105	115 40 54	3103
21	*a* Arietis	W.	103 51 5	3119	105 18 51	3119	106 46 38	3118	108 14 26	3116
	Aldebaran	W.	70 44 55	3081	72 13 28	3078	73 42 4	3076	75 10 43	3074
	Pollux	W.	29 56 46	3393	31 19 11	3365	32 42 7	3340	34 5 32	3318
	Saturn	E.	58 59 20	3080	57 30 46	3080	56 2 12	3078	54 33 36	3078
	Spica	E.	62 54 1	3069	61 25 13	3066	59 56 22	3065	58 27 29	3063
	Jupiter	E.	98 0 2	3091	96 31 42	3090	95 3 20	3087	93 34 55	3086
	Antares	E.	108 20 2	3093	106 51 44	3091	105 23 24	3089	103 55 1	3087
22	*a* Arietis	W.	115 33 53	3109	117 1 52	3108	118 29 52	3106	119 57 54	3105
	Aldebaran	W.	82 34 42	3060	84 3 41	3057	85 32 43	3053	87 1 50	3050
	Pollux	W.	41 8 22	3233	42 33 52	3220	43 59 38	3208	45 25 38	3196
	Saturn	E.	47 10 15	3071	45 41 30	3070	44 12 44	3069	42 43 56	3068
	Spica	E.	51 2 20	3049	49 33 8	3046	48 3 52	3043	46 34 32	3039
	Jupiter	E.	86 12 6	3071	84 43 21	3068	83 14 32	3065	81 45 39	3060

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	Sun	W.	106° 34′ 10″	3287	107° 58′ 37″	3299	109° 22′ 50″	3311	110° 46′ 49″	3323
	a Pegasi	W.	82 40 51	3048	84 10 4	3058	85 39 5	3069	87 7 53	3079
	a Arietis	W.	39 4 5	3014	40 34 1	3017	42 3 53	3022	43 33 39	3026
	Pollux	E.	38 59 37	3111	37 31 41	3138	36 4 17	3166	34 37 27	3196
	Regulus	E.	74 46 8	2917	73 14 11	2929	71 42 29	2940	70 11 1	2951
16	Sun	W.	117 43 28	3376	119 6 12	3385	120 28 46	3394	121 51 9	3402
	a Pegasi	W.	94 28 53	3126	95 56 31	3135	97 23 58	3144	98 51 14	3153
	a Arietis	W.	51 0 57	3052	52 30 6	3057	53 59 8	3062	55 28 4	3067
	Regulus	E.	62 36 58	3000	61 6 45	3009	59 36 44	3018	58 6 53	3026
	Saturn	E.	112 23 50	2985	110 53 19	2993	109 22 57	3001	107 52 45	3007
	Spica	E.	116 24 9	2975	114 53 25	2983	113 22 51	2990	111 52 26	2998
17	Sun	W.	128 40 47	3441	130 2 17	3447	131 23 40	3454	132 44 55	3461
	a Pegasi	W.	106 5 2	3194	107 31 18	3202	108 57 25	3209	110 23 23	3218
	a Arietis	W.	62 51 19	3089	64 19 42	3092	65 48 1	3096	67 16 16	3100
	Aldebaran	W.	29 29 5	3075	30 57 45	3076	32 26 24	3078	33 55 1	3079
	Regulus	E.	50 40 5	3063	49 11 10	3070	47 42 24	3077	46 13 46	3082
	Saturn	E.	100 23 43	3036	98 54 15	3042	97 24 54	3047	95 55 39	3051
	Spica	E.	104 22 33	3030	102 52 57	3034	101 23 27	3040	99 54 4	3044
18	a Pegasi	W.	117 30 49	3259	118 55 49	3266	120 20 40	3275	121 45 21	3284
	a Arietis	W.	74 36 33	3113	76 4 27	3114	77 32 19	3117	79 0 8	3119
	Aldebaran	W.	41 17 34	3067	42 45 59	3088	44 14 23	3090	45 42 45	3091
	Regulus	E.	38 52 28	3114	37 24 35	3120	35 56 50	3127	34 29 13	3133
	Saturn	E.	88 30 36	3068	87 1 47	3071	85 33 2	3073	84 4 19	3075
	Spica	E.	92 28 21	3062	90 59 25	3065	89 30 32	3067	88 1 42	3069
19	a Arietis	W.	86 18 50	3124	87 46 31	3124	89 14 12	3124	90 41 52	3124
	Aldebaran	W.	53 4 23	3093	54 32 41	3093	56 0 59	3092	57 29 18	3092
	Regulus	E.	27 13 19	3175	25 46 40	3188	24 20 16	3202	22 54 9	3219
	Saturn	E.	76 41 20	3082	75 12 49	3083	73 44 19	3083	72 15 49	3084
	Spica	E.	80 38 6	3076	79 9 27	3076	77 40 48	3077	76 12 10	3077
20	a Arietis	W.	98 0 13	3123	99 27 55	3123	100 55 37	3122	102 23 20	3120
	Aldebaran	W.	64 51 3	3087	66 19 28	3086	67 47 55	3084	69 16 24	3082
	Saturn	E.	64 53 24	3083	63 24 54	3083	61 56 24	3082	60 27 53	3081
	Spica	E.	68 48 56	3074	67 20 15	3073	65 51 32	3071	64 22 47	3070
	Jupiter	E.	103 53 0	3098	102 24 48	3097	100 56 35	3096	99 28 20	3093
	Antares	E.	114 12 48	3101	112 44 40	3100	111 16 30	3097	109 48 17	3096
21	a Arietis	W.	109 42 16	3114	111 10 8	3114	112 38 1	3112	114 5 56	3110
	Aldebaran	W.	76 39 24	3072	78 8 8	3069	79 36 56	3066	81 5 47	3063
	Pollux	W.	35 29 23	3297	36 53 38	3279	38 18 14	3263	39 43 9	3247
	Saturn	E.	53 4 59	3076	51 36 20	3075	50 7 40	3073	48 38 58	3073
	Spica	E.	56 58 34	3060	55 29 36	3057	54 0 34	3055	52 31 29	3052
	Jupiter	E	92 6 28	3083	90 37 58	3080	89 9 24	3078	87 40 47	3074
	Antares	E.	102 26 35	3084	100 58 6	3081	99 29 33	3078	98 0 57	3075
22	a Arietis	W.	121 25 58	3104	122 54 3	3102	124 22 10	3101	125 50 19	3100
	Aldebaran	W.	88 31 1	3046	90 0 17	3043	91 29 37	3039	92 59 2	3035
	Pollux	W.	46 51 52	3185	48 18 19	3174	49 44 59	3164	51 11 51	3155
	Saturn	E.	41 15 7	3067	39 46 17	3066	38 17 26	3066	36 48 35	3065
	Spica	E.	45 5 8	3035	43 35 39	3032	42 6 6	3028	40 36 28	3025
	Jupiter	E.	80 16 41	3057	78 47 39	3053	77 18 32	3049	75 49 20	3046

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	Antares	E.	96° 32′ 17″	3072	95° 3′ 33″	3069	93° 34′ 46″	3065	92° 5′ 54″	3062
23	Aldebaran	W.	94 28 31	3031	95 58 5	3026	97 27 45	3022	98 57 30	3018
	Pollux	W.	52 38 54	3145	54 6 9	3137	55 33 34	3129	57 1 9	3119
	Saturn	E.	35 19 43	3066	33 50 52	3067	32 22 2	3068	30 53 13	3070
	Spica	E.	39 6 46	3020	37 36 58	3016	36 7 5	3012	34 37 7	3007
	Jupiter	E.	74 20 4	3041	72 50 42	3037	71 21 15	3032	69 51 42	3027
	Antares	E.	84 40 30	3043	83 11 11	3039	81 41 46	3035	80 12 17	3030
24	Aldebaran	W.	106 27 42	2993	107 58 3	2988	109 28 31	2983	110 59 5	2977
	Pollux	W.	64 21 35	3080	65 50 9	3072	67 18 53	3065	68 47 46	3057
	Regulus	W.	27 19 31	3071	28 48 16	3058	30 17 17	3046	31 46 33	3034
	Jupiter	E.	62 22 26	3001	60 52 15	2996	59 21 57	2990	57 51 32	2985
	Antares	E.	72 43 28	3008	71 13 25	3002	69 43 15	2997	68 12 59	2993
	Mars	E.	115 5 21	3276	113 40 41	3270	112 15 55	3265	110 51 2	3256
	a Aquilæ	E.	122 16 44	3576	120 57 43	3553	119 38 17	3530	118 18 26	3506
25	Pollux	W.	76 14 31	3019	77 44 20	3011	79 14 19	3003	80 44 28	2996
	Regulus	W.	39 16 22	2981	40 46 58	2972	42 17 46	2962	43 48 46	2954
	Jupiter	E.	50 17 34	2952	48 46 21	2946	47 15 0	2939	45 43 30	2931
	Antares	E.	60 40 1	2965	59 9 4	2960	57 38 1	2954	56 6 51	2948
	Mars	E.	103 44 38	3224	102 18 57	3216	100 53 7	3209	99 27 8	3201
	a Aquilæ	E.	111 38 33	3416	110 11 33	3399	108 49 15	3384	107 26 40	3368
	Venus	E.	112 55 33	3401	111 33 18	3393	110 10 54	3386	108 48 21	3378
26	Pollux	W.	88 17 39	2955	89 48 48	2947	91 20 7	2939	92 51 37	2930
	Regulus	W.	51 26 42	2906	52 58 53	2897	54 31 16	2887	56 3 52	2877
	Jupiter	E.	38 3 38	2892	36 31 9	2883	34 58 29	2875	33 25 38	2866
	Antares	E.	48 29 5	2918	46 57 9	2912	45 25 5	2906	43 52 53	2900
	Mars	E.	92 14 54	3161	90 47 58	3152	89 20 51	3143	87 53 33	3133
	a Aquilæ	E.	100 29 37	3301	99 5 27	3289	97 41 3	3277	96 16 25	3266
	Venus	E.	101 53 16	3335	100 29 45	3326	99 6 4	3317	97 42 12	3307
27	Regulus	W.	63 50 2	2826	65 23 56	2816	66 58 3	2805	68 32 25	2794
	Antares	E	36 10 7	2873	34 37 14	2869	33 4 16	2866	31 31 13	2863
	Mars	E.	80 34 13	3085	79 5 45	3074	77 37 4	3064	76 8 10	3053
	a Aquilæ	E.	89 10 6	3214	87 44 14	3206	86 18 12	3197	84 51 59	3188
	Venus	E.	90 40 0	3256	89 14 57	3245	87 49 41	3234	86 24 12	3222
	Sun	E.	126 25 25	3188	124 59 1	3176	123 32 23	3164	122 5 31	3152
28	Regulus	W.	76 27 56	2736	78 3 48	2723	79 39 57	2711	81 16 22	2698
	Saturn	W.	27 23 47	2788	28 58 30	2767	30 33 41	2747	32 9 18	2729
	Spica	W.	22 29 46	2716	24 6 5	2703	25 42 41	2691	27 19 33	2679
	Mars	E.	68 40 15	2996	67 9 57	2983	65 39 23	2971	64 8 34	2959
	a Aquilæ	E.	77 38 32	3152	76 11 25	3146	74 44 11	3141	73 16 51	3136
	Venus	E.	79 13 17	3162	77 46 22	3148	76 19 11	3136	74 51 45	3123
	Sun	E.	114 47 24	3087	113 18 59	3074	111 50 18	3060	110 21 20	3047
29	Regulus	W.	89 22 45	2633	91 0 55	2619	92 39 24	2605	94 18 12	2592
	Saturn	W.	40 13 22	2642	41 51 20	2626	43 29 40	2610	45 8 22	2593
	Spica	W.	35 28 7	2614	37 6 44	2600	38 45 39	2586	40 24 53	2572
	Mars	E.	56 30 32	2894	54 58 6	2881	53 25 23	2868	51 52 23	2855
	a Aquilæ	E.	65 59 2	3124	64 31 22	3124	63 3 42	3126	61 36 4	3130
	Venus	E.	67 30 28	3053	66 1 21	3039	64 31 56	3024	63 2 13	3009
	Sun	E.	102 52 11	2974	101 21 26	2960	99 50 23	2945	98 19 1	2929

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	Antares	E.	90° 36′ 58″	3059	89° 7′ 58″	3055	87° 38′ 53″	3052	86° 9′ 44″	3047
23	Aldebaran	W.	100 27 21	3014	101 57 17	3009	103 27 19	3004	104 57 27	2998
	Pollux	W.	58 28 55	3111	59 56 51	3104	61 24 56	3096	62 53 11	3088
	Saturn	E.	29 24 27	3073	27 55 44	3078	26 27 7	3083	24 58 37	3091
	Spica	E.	33 7 3	3002	31 36 53	2997	30 6 37	2993	28 36 15	2988
	Jupiter	E.	68 22 3	3022	66 52 18	3018	65 22 27	3013	63 52 30	3007
	Antares	E.	78 42 42	3026	77 13 2	3022	75 43 16	3018	74 13 25	3013
24	Aldebaran	W.	112 29 46	2972	114 0 34	2966	115 31 29	2960	117 2 32	2954
	Pollux	W.	70 16 48	3049	71 46 0	3042	73 15 21	3034	74 44 51	3026
	Regulus	W.	33 16 4	3022	34 45 49	3012	36 15 47	3001	37 45 58	2991
	Jupiter	E.	56 21 0	2978	54 50 20	2973	53 19 33	2966	51 48 38	2959
	Antares	E.	66 42 37	2987	65 12 8	2982	63 41 33	2977	62 10 51	2970
	Mars	E.	109 26 1	3251	108 0 52	3245	106 35 36	3237	105 10 11	3231
	α Aquilæ	E.	116 58 11	3488	115 37 33	3469	114 16 34	3450	112 55 14	3431
25	Pollux	W.	82 14 46	2988	83 45 14	2980	85 15 52	2972	86 46 40	2963
	Regulus	W.	45 19 57	2943	46 51 21	2935	48 22 56	2925	49 54 43	2916
	Jupiter	E.	44 11 51	2924	42 40 2	2916	41 8 4	2909	39 35 56	2901
	Antares	E.	54 35 33	2942	53 4 7	2936	51 32 34	2930	50 0 53	2924
	Mars	E.	98 1 0	3193	96 34 43	3185	95 8 16	3178	93 41 40	3169
	α Aquilæ	E.	106 3 47	3354	104 40 38	3340	103 17 13	3327	101 53 33	3313
	Venus	E.	107 25 39	3370	106 2 48	3361	104 39 47	3353	103 16 37	3344
26	Pollux	W.	94 23 18	2921	95 55 10	2913	97 27 12	2905	98 59 25	2896
	Regulus	W.	57 36 40	2867	59 9 41	2857	60 42 55	2847	62 16 22	2837
	Jupiter	E.	31 52 36	2858	30 19 23	2848	28 45 57	2838	27 12 19	2828
	Antares	E.	42 20 34	2894	40 48 8	2888	39 15 34	2883	37 42 54	2878
	Mars	E.	86 26 4	3124	84 58 24	3114	83 30 32	3105	82 2 29	3096
	α Aquilæ	E.	94 51 34	3256	93 26 30	3245	92 1 14	3235	90 35 46	3225
	Venus	E.	96 18 9	3297	94 53 54	3288	93 29 28	3277	92 4 50	3267
27	Regulus	W.	70 7 1	2782	71 41 52	2771	73 16 58	2760	74 52 19	2747
	Antares	E	29 58 7	2862	28 24 59	2862	26 51 51	2864	25 18 46	2869
	Mars	E.	74 39 3	3042	73 9 42	3030	71 40 7	3019	70 10 18	3008
	α Aquilæ	E.	83 25 36	3181	81 59 4	3173	80 32 22	3165	79 5 31	3158
	Venus	E.	84 58 29	3211	83 32 33	3198	82 6 22	3187	80 39 57	3174
	SUN	E.	120 38 24	3139	119 11 2	3127	117 43 25	3114	116 15 32	3101
28	Regulus	W.	82 53 4	2686	84 30 3	2673	86 7 19	2660	87 44 53	2646
	Saturn	W.	33 45 20	2710	35 21 46	2693	36 58 35	2676	38 35 47	2659
	Spica	W.	28 56 41	2666	30 34 6	2653	32 11 49	2640	33 49 49	2627
	Mars	E.	62 37 30	2946	61 6 10	2934	59 34 34	2920	58 2 41	2908
	α Aquilæ	E.	71 49 25	3132	70 21 54	3129	68 54 19	3126	67 26 41	3125
	Venus	E.	73 24 3	3109	71 56 4	3096	70 27 49	3082	68 59 17	3068
	SUN	E.	108 52 6	3033	107 22 34	3019	105 52 45	3004	104 22 37	2990
29	Regulus	W.	95 57 18	2577	97 36 44	2564	99 16 29	2549	100 56 34	2536
	Saturn	W.	46 47 27	2577	48 26 54	2560	50 6 44	2544	51 46 56	2528
	Spica	W.	42 4 27	2557	43 44 21	2543	45 24 34	2529	47 5 7	2514
	Mars	E.	50 19 6	2841	48 45 31	2828	47 11 39	2814	45 37 29	2801
	α Aquilæ	E.	60 8 31	3134	58 41 3	3141	57 13 43	3149	55 46 33	3160
	Venus	E.	61 32 12	2994	60 1 52	2980	58 31 14	2965	57 0 17	2950
	SUN	E.	96 47 19	2913	95 15 17	2898	93 42 56	2882	92 10 14	2866

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semidiameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	22 50 41.15	9.348	S. 7 21 49.0	57.13	16 10.19	65.39	12 28.94	0.507
Wed.	2	22 54 25.26	9.328	6 58 54.7	57.39	16 9.94	65.32	12 16.53	0.527
Thur.	3	22 58 8.91	9.309	6 35 54.5	57.63	16 9.69	65.25	12 3.67	0.546
Fri.	4	23 1 52.10	9.291	6 12 48.8	57.85	16 9.43	65.18	11 50.35	0.564
Sat.	5	23 5 34.86	9.274	5 49 37.9	58.06	16 9.17	65.11	11 36.59	0.581
Sun.	6	23 9 17.21	9.258	5 26 22.3	58.25	16 8.91	65.05	11 22.43	0.598
Mon.	7	23 12 59.17	9.242	5 3 2.4	58.42	16 8.65	64.99	11 7.88	0.614
Tues.	8	23 16 40.74	9.226	4 39 38.5	58.58	16 8.39	64.94	10 52.94	0.630
Wed.	9	23 20 21.94	9.211	4 16 11.1	58.72	16 8.13	64.89	10 37.62	0.645
Thur.	10	23 24 2.80	9.197	3 52 40.4	58.84	16 7.87	64.84	10 21.97	0.659
Fri.	11	23 27 43.32	9.183	3 29 7.0	58.95	16 7.61	64.79	10 5.98	0.673
Sat.	12	23 31 23.54	9.170	3 5 31.4	59.04	16 7.35	64.75	9 49.69	0.686
Sun.	13	23 35 3.45	9.158	2 41 53.8	59.11	16 7.09	64.71	9 33.09	0.698
Mon.	14	23 38 43.07	9.146	2 18 14.6	59.17	16 6.83	64.67	9 16.19	0.709
Tues.	15	23 42 22.42	9.136	1 54 34.2	59.21	16 6.56	64.64	8 59.04	0.719
Wed.	16	23 46 1.54	9.126	1 30 52.9	59.24	16 6.29	64.61	8 41.66	0.729
Thur.	17	23 49 40.45	9.118	1 7 11.1	59.25	16 6.03	64.58	8 24.06	0.738
Fri.	18	23 53 19.15	9.110	0 43 29.1	59.25	16 5.76	64.56	8 6.24	0.746
Sat.	19	23 56 57.66	9.104	S. 0 19 47.4	59.24	16 5.49	64.54	7 48.25	0.753
Sun.	20	0 0 36.03	9.098	N. 0 3 53.7	59.21	16 5.22	64.52	7 30.12	0.759
Mon.	21	0 4 14.27	9.093	0 27 34.0	59.17	16 4.95	64.50	7 11.86	0.764
Tues.	22	0 7 52.41	9.089	0 51 12.9	59.11	16 4.68	64.49	6 53.47	0.768
Wed.	23	0 11 30.46	9.086	1 14 50.3	59.04	16 4.40	64.48	6 35.03	0.770
Thur.	24	0 15 8.44	9.084	1 38 25.9	58.95	16 4.12	64.47	6 16.51	0.772
Fri.	25	0 18 46.39	9.083	2 1 59.2	58.85	16 3.84	64.46	5 57.97	0.773
Sat.	26	0 22 24.33	9.083	2 25 29.9	58.73	16 3.56	64.46	5 39.42	0.773
Sun.	27	0 26 2.30	9.084	2 48 57.7	58.60	16 3.28	64.46	5 20.87	0.772
Mon.	28	0 29 40.30	9.086	3 12 22.2	58.46	16 3.00	64.46	5 2.36	0.770
Tues.	29	0 33 18.35	9.089	3 35 43.2	58.30	16 2.72	64.47	4 43.92	0.767
Wed.	30	0 36 56.48	9.092	3 59 0.1	58.13	16 2.43	64.48	4 25.56	0.764
Thur.	31	0 40 34.69	9.097	4 22 12.7	57.94	16 2.14	64.49	4 7.27	0.760
Fri.	32	0 44 13.02	9.102	N. 4 45 20.7	57.74	16 1.85	64.50	3 49.10	0.755

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	22 50 39.20	9.348	S. 7 22 0.9	57.13	12 29.04	0.507	22 38 10.16
Wed.	2	22 54 23.35	9.328	6 59 6.5	57.39	12 16.63	0.527	22 42 6.72
Thur.	3	22 58 7.04	9.309	6 36 6.2	57.63	12 3.77	0.546	22 46 3.27
Fri.	4	23 1 50.27	9.291	6 13 0.3	57.85	11 50.45	0.564	22 49 59.82
Sat.	5	23 5 33.07	9.274	5 49 49.2	58.06	11 36.69	0.581	22 53 56.38
Sun.	6	23 9 15.46	9.258	5 26 33.4	58.25	11 22.53	0.598	22 57 52.93
Mon.	7	23 12 57.46	9.242	5 3 13.3	58.42	11 7.98	0.614	23 1 49.48
Tues.	8	23 16 39.07	9.226	4 39 49.2	58.58	10 53.04	0.630	23 5 46.03
Wed.	9	23 20 20.31	9.211	4 16 21.6	58.72	10 37.72	0.645	23 9 42.59
Thur.	10	23 24 1.21	9.197	3 52 50.7	58.84	10 22.07	0.659	23 13 39.14
Fri.	11	23 27 41.78	9.183	3 29 17.0	58.95	10 6.09	0.673	23 17 35.69
Sat.	12	23 31 22.04	9.170	3 5 41.1	59.04	9 49.80	0.686	23 21 32.24
Sun.	13	23 35 1.99	9.158	2 42 3.2	59.11	9 33.20	0.698	23 25 28.79
Mon.	14	23 38 41.65	9.146	2 18 23.7	59.17	9 16.30	0.709	23 29 25.35
Tues.	15	23 42 21.05	9.136	1 54 43.0	59.21	8 59.15	0.719	23 33 21.90
Wed.	16	23 46 0.22	9.126	1 31 1.4	59.24	8 41.77	0.729	23 37 18.45
Thur.	17	23 49 39.17	9.118	1 7 19.4	59.25	8 24.17	0.738	23 41 15.00
Fri.	18	23 53 17.91	9.110	0 43 37.2	59.25	8 6.35	0.746	23 45 11.56
Sat.	19	23 56 56.47	9.104	S. 0 19 55.2	59.24	7 48.36	0.753	23 49 8.11
Sun.	20	0 0 34.89	9.098	N. 0 3 46.3	59.21	7 30.23	0.759	23 53 4.66
Mon.	21	0 4 13.18	9.093	0 27 26.9	59.17	7 11.97	0.764	23 57 1.21
Tues.	22	0 7 51.36	9.089	0 51 6.2	59.11	6 53.60	0.768	0 0 57.76
Wed.	23	0 11 29.45	9.086	1 14 43.9	59.04	6 35.13	0.770	0 4 54.32
Thur.	24	0 15 7.48	9.084	1 38 19.8	58.95	6 16.61	0.772	0 8 50.87
Fri.	25	0 18 45.48	9.083	2 1 53.4	58.85	5 58.06	0.773	0 12 47.42
Sat.	26	0 22 23.47	9.083	2 25 24.4	58.73	5 39.50	0.773	0 16 43.97
Sun.	27	0 26 1.48	9.084	2 48 52.5	58.60	5 20.95	0.772	0 20 40.53
Mon.	28	0 29 39.52	9.086	3 12 17.3	58.46	5 2.44	0.770	0 24 37.08
Tues.	29	0 33 17.62	9.089	3 35 38.6	58.30	4 43.99	0.767	0 28 33.63
Wed.	30	0 36 55.80	9.092	3 58 55.8	58.13	4 25.62	0.764	0 32 30.18
Thur.	31	0 40 34.06	9.097	4 22 8.7	57.94	4 7.32	0.760	0 36 26.74
Fri.	32	0 44 12.44	9.102	N. 4 45 17.0	57.74	3 49.15	0.755	0 40 23.29

Note. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	61	341 12 46.8	12 23.9	150.35	+0.25	9.9963210	47.0	1 21 36.44
2	62	342 12 54.6	12 31.6	150.29	0.36	.9964343	47.4	1 17 40.53
3	63	343 13 1.0	12 37.9	150.23	0.45	.9965484	47.7	1 13 44.62
4	64	344 13 5.8	12 42.6	150.16	0.51	.9966633	48.0	1 9 48.71
5	65	345 13 8.8	12 45.5	150.09	0.55	.9967788	48.2	1 5 52.81
6	66	346 13 10.0	12 46.6	150.01	0.56	.9968947	48.3	1 1 56.90
7	67	347 13 9.3	12 45.8	149.93	0.53	.9970109	48.4	0 58 0.99
8	68	348 13 6.8	12 43.2	149.85	0.47	.9971274	48.5	0 54 5.08
9	69	349 13 2.4	12 38.7	149.77	0.39	.9972440	48.6	0 50 9.17
10	70	350 12 56.0	12 32.2	149.68	0.29	.9973608	48.7	0 46 13.27
11	71	351 12 47.5	12 23.7	149.59	0.17	.9974778	48.8	0 42 17.36
12	72	352 12 36.8	12 12.9	149.51	+0.02	.9975951	48.9	0 38 21.45
13	73	353 12 24.0	12 0.0	149.42	—0.12	.9977126	49.0	0 34 25.54
14	74	354 12 9.0	11 44.9	149.33	0.26	.9978304	49.2	0 30 29.63
15	75	355 11 51.7	11 27.5	149.23	0.39	.9979486	49.4	0 26 33.74
16	76	356 11 32.0	11 7.8	149.13	0.50	.9980674	49.6	0 22 37.83
17	77	357 11 9.9	10 45.6	149.03	0.59	.9981868	49.9	0 18 41.92
18	78	358 10 45.6	10 21.2	148.94	0.65	.9983070	50.2	0 14 46.01
19	79	359 10 19.1	9 54.6	148.85	0.68	.9984279	50.5	0 10 50.11
20	80	0 9 50.4	9 25.8	148.76	0.68	.9985496	50.9	0 6 54.21
21	81	1 9 19.5	8 54.9	148.67	0.65	.9986722	51.2	0 2 58.30 23 59 2.39
22	82	2 8 46.5	8 21.8	148.58	0.60	.9987957	51.6	23 55 6.48
23	83	3 8 11.4	7 46.6	148.49	0.52	.9989201	52.0	23 51 10.57
24	84	4 7 34.3	7 9.4	148.41	0.42	.9990453	52.4	23 47 14.67
25	85	5 6 55.2	6 30.2	148.33	0.32	.9991713	52.7	23 43 18.77
26	86	6 6 14.2	5 49.2	148.25	0.19	.9992980	53.0	23 39 22.86
27	87	7 5 31.3	5 6.2	148.17	—0.06	.9994254	53.2	23 35 26.95
28	88	8 4 46.7	4 21.5	148.09	+0.08	.9995532	53.3	23 31 31.04
29	89	9 4 0.3	3 35.0	148.02	0.19	.9996813	53.4	23 27 35.13
30	90	10 3 12.0	2 46.6	147.95	0.28	.9998096	53.4	23 23 39.23
31	91	11 2 22.0	1 56.5	147.88	0.36	9.9999377	53.3	23 19 43.32
32	92	12 1 30.3	1 4.7	147.80	+0.41	0.0000656	53.2	23 15 47.41

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 47.8	15 54.3	57 51.7	+1.97	58 15.8	+2.01	18 41.0	2.38	22.7
2	16 0.9	16 7.5	58 40.1	2.02	59 4.3	1.99	19 38.8	2.43	23.7
3	16 13.9	16 20.0	59 27.9	1.92	59 50.3	1.79	20 37.2	2.43	24.7
4	16 25.6	16 30.6	60 10.8	1.61	60 29.0	1.38	21 35.2	2.40	25.7
5	16 34.7	16 37.8	60 44.1	1.11	60 55.5	0.79	22 32.1	2.34	26.7
6	16 39.8	16 40.6	61 2.9	+0.43	61 5.9	+0.05	23 27.7	2.29	27.7
7	16 40.2	16 38.5	61 4.2	−0.33	60 57.9	−0.72	☌		28.7
8	16 35.5	16 31.4	60 47.0	1.08	60 31.9	1.42	0 22.2	2.26	0.3
9	16 26.2	16 20.2	60 12.9	1.71	59 50.8	1.96	1 16.1	2.24	1.3
10	16 13.4	16 6.1	59 26.0	2.15	58 59.2	2.28	2 9.6	2.23	2.3
11	15 58.5	15 50.7	58 31.2	2.36	58 2.6	2.38	3 3.1	2.22	3.3
12	15 42.9	15 35.3	57 34.0	2.35	57 6.1	2.28	3 56.3	2.21	4.3
13	15 28.0	15 21.1	56 39.3	2.17	56 14.0	2.04	4 49.0	2.18	5.3
14	15 14.7	15 8.9	55 50.4	1.88	55 28.9	1.70	5 40.7	2.13	6.3
15	15 3.7	14 59.1	55 9.7	1.50	54 52.9	1.30	6 30.9	2.06	7.3
16	14 55.2	14 51.9	54 38.5	1.10	54 26.6	0.89	7 19.4	1.98	8.3
17	14 49.3	14 47.4	54 17.1	0.69	54 10.1	0.49	8 5.9	1.90	9.3
18	14 46.1	14 45.4	54 5.3	−0.30	54 2.8	−0.12	8 50.8	1.84	10.3
19	14 45.3	14 45.8	54 2.4	+0.05	54 4.1	+0.21	9 34.2	1.79	11.3
20	14 46.7	14 48.1	54 7.5	0.36	54 12.6	0.48	10 16.9	1.77	12.3
21	14 49.9	14 52.0	54 19.2	0.60	54 27.0	0.71	10 59.2	1.77	13.3
22	14 54.5	14 57.3	54 36.1	0.80	54 46.2	0.88	11 41.9	1.80	14.3
23	15 0.3	15 3.5	54 57.3	0.95	55 9.1	1.02	12 25.7	1.85	15.3
24	15 6.9	15 10.5	55 21.6	1.07	55 34.8	1.13	13 11.0	1.93	16.3
25	15 14.3	15 18.2	55 48.7	1.17	56 3.0	1.21	13 58.6	2.03	17.3
26	15 22.2	15 26.4	56 17.8	1.26	56 33.1	1.30	14 48.6	2.14	18.3
27	15 30.7	15 35.1	56 48.9	1.33	57 5.1	1.37	15 41.2	2.24	19.3
28	15 39.6	15 44.2	57 21.7	1.40	57 38.7	1.42	16 35.9	2.31	20.3
29	15 48.9	15 53.6	57 55.9	1.44	58 13.2	1.45	17 31.9	2.35	21.3
30	15 58.3	16 3.0	58 30.6	1.44	58 47.8	1.41	18 28.4	2.35	22.3
31	16 7.6	16 11.9	59 4.5	1.36	59 20.5	1.28	19 24.5	2.32	23.3
32	16 16.0	16 19.6	59 35.3	+1.17	59 48.5	+1.01	20 19.7	2.28	24.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 1.					THURSDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 36 58.31	2.3920	S.20 22 35.4	1.961	0	18 35 1.41	2.5016	S.19 29 19.8	4.293
1	16 39 21.94	2.3957	20 24 29.4	1.840	1	18 37 31.52	2.5022	19 24 58.3	4.426
2	16 41 45.79	2.3993	20 26 16.2	1.719	2	18 40 1.67	2.5027	19 20 28.7	4.559
3	16 44 9.86	2.4029	20 27 55.7	1.598	3	18 42 31.84	2.5031	19 15 51.2	4.691
4	16 46 34.14	2.4065	20 29 28.0	1.476	4	18 45 2.04	2.5035	19 11 5.8	4.824
5	16 48 58.63	2.4100	20 30 52.9	1.353	5	18 47 32.26	2.5038	19 6 12.4	4.956
6	16 51 23.34	2.4135	20 32 10.4	1.229	6	18 50 2.50	2.5040	19 1 11.1	5.088
7	16 53 48.25	2.4169	20 33 20.4	1.105	7	18 52 32.75	2.5042	18 56 1.8	5.220
8	16 56 13.37	2.4203	20 34 23.0	0.980	8	18 55 3.01	2.5043	18 50 44.7	5.351
9	16 58 38.69	2.4236	20 35 18.1	0.855	9	18 57 33.27	2.5044	18 45 19.7	5.482
10	17 1 4.20	2.4268	20 36 5.6	0.729	10	19 0 3.54	2.5043	18 39 46.9	5.612
11	17 3 29.91	2.4300	20 36 45.6	0.603	11	19 2 33.80	2.5042	18 34 6.3	5.742
12	17 5 55.80	2.4331	20 37 18.0	0.476	12	19 5 4.05	2.5041	18 28 17.9	5.872
13	17 8 21.88	2.4362	20 37 42.8	0.349	13	19 7 34.29	2.5039	18 22 21.7	6.001
14	17 10 48.14	2.4392	20 37 59.9	0.221	14	19 10 4.52	2.5036	18 16 17.8	6.130
15	17 13 14.58	2.4421	20 38 9.3	0.093	15	19 12 34.73	2.5032	18 10 6.2	6.258
16	17 15 41.20	2.4450	20 38 11.0	0.036	16	19 15 4.91	2.5028	18 3 46.9	6.385
17	17 18 7.99	2.4478	20 38 5.0	0.165	17	19 17 35.07	2.5024	17 57 20.0	6.512
18	17 20 34.94	2.4506	20 37 51.2	0.295	18	19 20 5.20	2.5019	17 50 45.4	6.638
19	17 23 2.06	2.4533	20 37 29.6	0.425	19	19 22 35.30	2.5014	17 44 3.3	6.764
20	17 25 29.34	2.4559	20 37 0.2	0.556	20	19 25 5.37	2.5008	17 37 13.7	6.889
21	17 27 56.77	2.4585	20 36 22.9	0.687	21	19 27 35.40	2.5001	17 30 16.6	7.014
22	17 30 24.36	2.4610	20 35 37.8	0.818	22	19 30 5.38	2.4993	17 23 12.0	7.138
23	17 32 52.09	2.4634	S.20 34 44.8	0.949	23	19 32 35.31	2.4985	S.17 16 0.0	7.262
	WEDNESDAY 2.					FRIDAY 4.			
0	17 35 19.97	2.4658	S.20 33 43.9	1.081	0	19 35 5.20	2.4976	S.17 8 40.6	7.384
1	17 37 47.99	2.4682	20 32 35.1	1.213	1	19 37 35.03	2.4967	17 1 13.9	7.505
2	17 40 16.15	2.4704	20 31 18.3	1.345	2	19 40 4.81	2.4958	16 53 40.0	7.625
3	17 42 44.44	2.4725	20 29 53.6	1.478	3	19 42 34.53	2.4948	16 45 58.9	7.745
4	17 45 12.85	2.4746	20 28 20.9	1.611	4	19 45 4.19	2.4938	16 38 10.6	7.864
5	17 47 41.38	2.4766	20 26 40.2	1.745	5	19 47 33.78	2.4927	16 30 15.2	7.983
6	17 50 10.04	2.4786	20 24 51.5	1.878	6	19 50 3.31	2.4915	16 22 12.7	8.101
7	17 52 38.82	2.4805	20 22 54.8	2.012	7	19 52 32.76	2.4903	16 14 3.2	8.217
8	17 55 7.70	2.4823	20 20 50.1	2.145	8	19 55 2.14	2.4890	16 5 46.7	8.332
9	17 57 36.69	2.4840	20 18 37.4	2.279	9	19 57 31.44	2.4877	15 57 23.3	8.447
10	18 0 5.78	2.4857	20 16 16.6	2.413	10	20 0 0.66	2.4864	15 48 53.1	8.560
11	18 2 34.97	2.4873	20 13 47.8	2.547	11	20 2 29.80	2.4850	15 40 16.1	8.672
12	18 5 4.26	2.4888	20 11 10.9	2.681	12	20 4 58.86	2.4836	15 31 32.4	8.784
13	18 7 33.63	2.4902	20 8 26.0	2.816	13	20 7 27.83	2.4822	15 22 42.0	8.895
14	18 10 3.09	2.4916	20 5 33.0	2.950	14	20 9 56.72	2.4807	15 13 44.9	9.005
15	18 12 32.63	2.4929	20 2 31.9	3.085	15	20 12 25.51	2.4791	15 4 41.3	9.113
16	18 15 2.24	2.4941	19 59 22.8	3.219	16	20 14 54.21	2.4776	14 55 31.3	9.221
17	18 17 31.92	2.4953	19 56 5.6	3.353	17	20 17 22.82	2.4760	14 46 14.9	9.328
18	18 20 1.68	2.4964	19 52 40.4	3.487	18	20 19 51.33	2.4744	14 36 52.0	9.434
19	18 22 31.50	2.4975	19 49 7.1	3.622	19	20 22 19.74	2.4727	14 27 22.8	9.538
20	18 25 1.38	2.4985	19 45 25.7	3.756	20	20 24 48.05	2.4710	14 17 47.5	9.640
21	18 27 31.32	2.4993	19 41 36.3	3.891	21	20 27 16.26	2.4693	14 8 6.0	9.742
22	18 30 1.30	2.5001	19 37 38.8	4.025	22	20 29 44.37	2.4676	13 58 18.5	9.843
23	18 32 31.33	2.5009	19 33 33.3	4.159	23	20 32 12.37	2.4658	13 48 25.0	9.942
24	18 35 1.41	2.5016	S.19 29 19.8	4.293	24	20 34 40.27	2.4640	S.13 38 25.5	10.040

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 34 40.27	2.4640	S. 13 38 25.5	10.040
1	20 37 8.06	2.4622	13 28 20.2	10.137
2	20 39 35.74	2.4604	13 18 9.1	10.233
3	20 42 3.31	2.4585	13 7 52.3	10.328
4	20 44 30.76	2.4566	12 57 29.8	10.421
5	20 46 58.10	2.4547	12 47 1.8	10.513
6	20 49 25.33	2.4528	12 36 28.3	10.603
7	20 51 52.44	2.4508	12 25 49.5	10.692
8	20 54 19.43	2.4489	12 15 5.3	10.780
9	20 56 46.31	2.4470	12 4 15.9	10.867
10	20 59 13.07	2.4450	11 53 21.3	10.952
11	21 1 39.71	2.4430	11 42 21.7	11.035
12	21 4 6.23	2.4410	11 31 17.1	11.117
13	21 6 32.63	2.4390	11 20 7.6	11.196
14	21 8 58.91	2.4370	11 8 53.3	11.274
15	21 11 25.07	2.4350	10 57 34.3	11.355
16	21 13 51.11	2.4330	10 46 10.7	11.432
17	21 16 17.03	2.4309	10 34 42.5	11.507
18	21 18 42.82	2.4289	10 23 9.9	11.580
19	21 21 8.49	2.4269	10 11 33.0	11.652
20	21 23 34.05	2.4249	9 59 51.7	11.723
21	21 25 59.48	2.4228	9 48 6.2	11.792
22	21 28 24.79	2.4208	9 36 16.7	11.859
23	21 30 49.98	2.4188	S. 9 24 23.2	11.925

SUNDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 33 15.05	2.4167	S. 9 12 25.8	11.989
1	21 35 40.00	2.4147	9 0 24.6	12.052
2	21 38 4.82	2.4127	8 48 19.6	12.113
3	21 40 29.52	2.4107	8 36 11.0	12.172
4	21 42 54.11	2.4087	8 23 59.0	12.230
5	21 45 18.58	2.4067	8 11 43.5	12.287
6	21 47 42.92	2.4047	7 59 24.6	12.342
7	21 50 7.15	2.4028	7 47 2.5	12.395
8	21 52 31.26	2.4009	7 34 37.2	12.447
9	21 54 55.26	2.3990	7 22 8.9	12.497
10	21 57 19.14	2.3970	7 9 37.6	12.545
11	21 59 42.90	2.3951	6 57 3.5	12.592
12	22 2 6.55	2.3932	6 44 26.6	12.637
13	22 4 30.08	2.3913	6 31 47.1	12.680
14	22 6 53.50	2.3894	6 19 5.0	12.722
15	22 9 16.81	2.3875	6 6 20.5	12.762
16	22 11 40.01	2.3856	5 53 33.6	12.800
17	22 14 3.09	2.3838	5 40 44.5	12.837
18	22 16 26.07	2.3820	5 27 53.2	12.872
19	22 18 48.94	2.3802	5 14 59.9	12.905
20	22 21 11.70	2.3784	5 2 4.6	12.937
21	22 23 34.35	2.3767	4 49 7.5	12.967
22	22 25 56.90	2.3750	4 36 8.6	12.995
23	22 28 19.35	2.3733	4 23 8.1	13.022
24	22 30 41.69	2.3716	S. 4 10 6.0	13.047

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 30 41.69	2.3716	S. 4 10 6.0	13.047
1	22 33 3.93	2.3699	3 57 2.4	13.071
2	22 35 26.08	2.3682	3 43 57.5	13.093
3	22 37 48.13	2.3666	3 30 51.3	13.113
4	22 40 10.07	2.3650	3 17 44.0	13.131
5	22 42 31.92	2.3634	3 4 35.6	13.148
6	22 44 53.68	2.3619	2 51 26.3	13.163
7	22 47 15.35	2.3604	2 38 16.1	13.176
8	22 49 36.93	2.3589	2 25 5.2	13.188
9	22 51 58.42	2.3574	2 11 53.6	13.198
10	22 54 19.82	2.3560	1 58 41.5	13.206
11	22 56 41.14	2.3546	1 45 28.9	13.213
12	22 59 2.37	2.3532	1 32 15.9	13.218
13	23 1 23.52	2.3518	1 19 2.7	13.221
14	23 3 44.59	2.3504	1 5 49.4	13.223
15	23 6 5.58	2.3491	0 52 36.0	13.223
16	23 8 26.48	2.3478	0 39 22.6	13.221
17	23 10 47.31	2.3465	0 26 9.4	13.218
18	23 13 8.06	2.3453	S. 0 12 56.4	13.213
19	23 15 28.74	2.3441	N. 0 0 16.3	13.207
20	23 17 49.35	2.3429	0 13 28.5	13.199
21	23 20 9.89	2.3417	0 26 40.2	13.189
22	23 22 30.35	2.3406	0 39 51.3	13.178
23	23 24 50.75	2.3395	N. 0 53 1.6	13.166

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 27 11.09	2.3384	N. 1 6 11.1	13.152
1	23 29 31.36	2.3373	1 19 19.7	13.135
2	23 31 51.57	2.3363	1 32 27.3	13.117
3	23 34 11.72	2.3353	1 45 33.7	13.098
4	23 36 31.81	2.3343	1 58 39.0	13.077
5	23 38 51.84	2.3334	2 11 43.0	13.055
6	23 41 11.82	2.3325	2 24 45.6	13.031
7	23 43 31.74	2.3316	2 37 46.7	13.006
8	23 45 51.61	2.3307	2 50 46.3	12.979
9	23 48 11.42	2.3298	3 3 44.2	12.950
10	23 50 31.19	2.3290	3 16 40.3	12.920
11	23 52 50.91	2.3282	3 29 34.6	12.889
12	23 55 10.58	2.3274	3 42 27.0	12.856
13	23 57 30.21	2.3267	3 55 17.4	12.822
14	23 59 49.79	2.3260	4 8 5.6	12.786
15	0 2 9.33	2.3253	4 20 51.6	12.748
16	0 4 28.83	2.3246	4 33 35.3	12.709
17	0 6 48.29	2.3240	4 46 16.6	12.668
18	0 9 7.71	2.3234	4 58 55.5	12.627
19	0 11 27.10	2.3228	5 11 31.9	12.584
20	0 13 46.45	2.3222	5 24 5.6	12.539
21	0 16 5.77	2.3217	5 36 36.5	12.493
22	0 18 25.05	2.3211	5 49 4.7	12.446
23	0 20 44.30	2.3206	6 1 30.1	12.398
24	0 23 3.52	2.3201	N. 6 13 52.6	12.348

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 23 3.52	2.3201	N. 6 13 52.6	12.348
1	0 25 22.71	2.3197	6 26 12.0	12.297
2	0 27 41.88	2.3192	6 38 28.2	12.244
3	0 30 1.02	2.3188	6 50 41.2	12.190
4	0 32 20.13	2.3184	7 2 51.0	12.135
5	0 34 39.22	2.3180	7 14 57.4	12.078
6	0 36 58.28	2.3176	7 27 0.3	12.020
7	0 39 17.32	2.3172	7 38 59.7	11.961
8	0 41 36.34	2.3168	7 50 55.6	11.900
9	0 43 55.34	2.3165	8 2 47.8	11.838
10	0 46 14.32	2.3162	8 14 36.2	11.775
11	0 48 33.28	2.3159	8 26 20.8	11.711
12	0 50 52.23	2.3156	8 38 1.6	11.646
13	0 53 11.16	2.3154	8 49 38.4	11.579
14	0 55 30.08	2.3151	9 1 11.1	11.511
15	0 57 48.98	2.3148	9 12 39.8	11.443
16	1 0 7.86	2.3146	9 24 4.3	11.374
17	1 2 26.73	2.3144	9 35 24.6	11.303
18	1 4 45.59	2.3142	9 46 40.6	11.231
19	1 7 4.44	2.3140	9 57 52.3	11.158
20	1 9 23.27	2.3138	10 8 59.5	11.084
21	1 11 42.09	2.3136	10 20 2.2	11.008
22	1 14 0.90	2.3134	10 31 0.4	10.931
23	1 16 19.70	2.3132	N.10 41 54.0	10.854

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 m	Declination.	Diff. for 1 m.
0	1 18 38.49	2.3130	N.10 52 42.9	10.776
1	1 20 57.27	2.3129	11 3 27.1	10.696
2	1 23 16.04	2.3127	11 14 6.4	10.615
3	1 25 34.80	2.3126	11 24 40.9	10.534
4	1 27 53.55	2.3124	11 35 10.5	10.452
5	1 30 12.29	2.3123	11 45 35.1	10.368
6	1 32 31.03	2.3121	11 55 54.6	10.283
7	1 34 49.76	2.3120	12 6 9.0	10.198
8	1 37 8.47	2.3119	12 16 18.4	10.112
9	1 39 27.18	2.3118	12 26 22.5	10.024
10	1 41 45.89	2.3116	12 36 21.3	9.936
11	1 44 4.59	2.3115	12 46 14.9	9.848
12	1 46 23.27	2.3113	12 56 3.1	9.759
13	1 48 41.95	2.3112	13 5 45.9	9.668
14	1 51 0.62	2.3110	13 15 23.3	9.577
15	1 53 19.28	2.3109	13 24 55.2	9.485
16	1 55 37.93	2.3107	13 34 21.5	9.392
17	1 57 56.57	2.3106	13 43 42.3	9.299
18	2 0 15.20	2.3104	13 52 57.4	9.205
19	2 2 33.82	2.3103	14 2 6.9	9.110
20	2 4 52.43	2.3101	14 11 10.6	9.014
21	2 7 11.03	2.3099	14 20 8.6	8.918
22	2 9 29.62	2.3097	14 29 0.7	8.821
23	2 11 48.19	2.3094	14 37 47.0	8.723
24	2 14 6.75	2.3092	N.14 46 27.5	8.625

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 14 6.75	2.3092	N.14 46 27.5	8.625
1	2 16 25.29	2.3090	14 55 2.0	8.526
2	2 18 43.83	2.3088	15 3 30.6	8.426
3	2 21 2.35	2.3085	15 11 53.2	8.326
4	2 23 20.85	2.3082	15 20 9.7	8.225
5	2 25 39.33	2.3079	15 28 20.2	8.124
6	2 27 57.80	2.3076	15 36 24.6	8.022
7	2 30 16.25	2.3073	15 44 22.9	7.920
8	2 32 34.68	2.3070	15 52 15.0	7.817
9	2 34 53.09	2.3066	16 0 0.9	7.713
10	2 37 11.48	2.3062	16 7 40.6	7.609
11	2 39 29.84	2.3058	16 15 14.1	7.505
12	2 41 48.18	2.3054	16 22 41.3	7.400
13	2 44 6.49	2.3050	16 30 2.2	7.295
14	2 46 24.78	2.3046	16 37 16.7	7.189
15	2 48 43.04	2.3042	16 44 24.9	7.083
16	2 51 1.28	2.3037	16 51 26.7	6.976
17	2 53 19.49	2.3032	16 58 22.1	6.869
18	2 55 37.66	2.3026	17 5 11.0	6.762
19	2 57 55.80	2.3020	17 11 53.5	6.654
20	3 0 13.90	2.3014	17 18 29.6	6.546
21	3 2 31.97	2.3008	17 24 59.2	6.438
22	3 4 50.00	2.3002	17 31 22.2	6.330
23	3 7 8.00	2.2996	N.17 37 38.7	6.221

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 9 25.95	2.2989	N.17 43 48.7	6.112
1	3 11 43.86	2.2982	17 49 52.1	6.002
2	3 14 1.73	2.2975	17 55 48.9	5.893
3	3 16 19.55	2.2967	18 1 39.2	5.783
4	3 18 37.33	2.2959	18 7 22.8	5.673
5	3 20 55.06	2.2951	18 12 59.8	5.562
6	3 23 12.74	2.2942	18 18 30.2	5.451
7	3 25 30.37	2.2933	18 23 54.0	5.340
8	3 27 47.94	2.2924	18 29 11.1	5.229
9	3 30 5.46	2.2915	18 34 21.5	5.118
10	3 32 22.92	2.2906	18 39 25.3	5.007
11	3 34 40.32	2.2896	18 44 22.4	4.896
12	3 36 57.67	2.2886	18 49 12.8	4.785
13	3 39 14.95	2.2875	18 53 56.5	4.673
14	3 41 32.17	2.2864	18 58 33.5	4.561
15	3 43 49.32	2.2853	19 3 3.8	4.449
16	3 46 6.41	2.2842	19 7 27.4	4.337
17	3 48 23.43	2.2830	19 11 44.3	4.225
18	3 50 40.37	2.2818	19 15 54.4	4.113
19	3 52 57.24	2.2806	19 19 57.8	4.001
20	3 55 14.04	2.2793	19 23 54.5	3.889
21	3 57 30.76	2.2780	19 27 44.5	3.777
22	3 59 47.40	2.2767	19 31 27.7	3.665
23	4 2 3.96	2.2753	19 35 4.2	3.553
24	4 4 20.43	2.2739	N.19 38 34.1	3.441

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 4 20.43	2.2739	N.19 38 34.1	3.441
1	4 6 36.82	2.2724	19 41 57.3	3.330
2	4 8 53.12	2.2710	19 45 13.7	3.218
3	4 11 9.33	2.2695	19 48 23.4	3.106
4	4 13 25.46	2.2679	19 51 26.4	2.995
5	4 15 41.49	2.2663	19 54 22.8	2.883
6	4 17 57.42	2.2647	19 57 12.4	2.772
7	4 20 13.26	2.2631	19 59 55.3	2.660
8	4 22 29.00	2.2615	20 2 31.6	2.549
9	4 24 44.64	2.2598	20 5 1.2	2.438
10	4 27 0.18	2.2581	20 7 24.1	2.327
11	4 29 15.61	2.2563	20 9 40.4	2.217
12	4 31 30.94	2.2545	20 11 50.1	2.106
13	4 33 46.16	2.2527	20 13 53.1	1.995
14	4 36 1.27	2.2509	20 15 49.5	1.885
15	4 38 16.27	2.2490	20 17 39.3	1.775
16	4 40 31.15	2.2471	20 19 22.5	1.665
17	4 42 45.91	2.2451	20 20 59.1	1.555
18	4 45 0.56	2.2432	20 22 29.1	1.446
19	4 47 15.09	2.2412	20 23 52.6	1.337
20	4 49 29.50	2.2391	20 25 9.5	1.228
21	4 51 43.78	2.2370	20 26 19.9	1.119
22	4 53 57.94	2.2349	20 27 23.8	1.011
23	4 56 11.97	2.2328	N.20 28 21.2	0.903

MONDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 58 25.88	2.2306	N.20 29 12.1	0.795
1	5 0 39.65	2.2284	20 29 56.6	0.688
2	5 2 53.29	2.2262	20 30 34.6	0.580
3	5 5 6.80	2.2240	20 31 6.2	0.473
4	5 7 20.17	2.2217	20 31 31.3	0.366
5	5 9 33.41	2.2194	20 31 50.1	0.260
6	5 11 46.50	2.2171	20 32 2.5	0.154
7	5 13 59.45	2.2147	20 32 8.5	0.048
8	5 16 12.26	2.2123	20 32 8.2	0.058
9	5 18 24.93	2.2099	20 32 1.6	0.163
10	5 20 37.45	2.2075	20 31 48.7	0.268
11	5 22 49.83	2.2051	20 31 29.5	0.372
12	5 25 2.06	2.2026	20 31 4.1	0.476
13	5 27 14.14	2.2001	20 30 32.5	0.579
14	5 29 26.07	2.1975	20 29 54.6	0.682
15	5 31 37.84	2.1949	20 29 10.6	0.785
16	5 33 49.46	2.1924	20 28 20.4	0.887
17	5 36 0.93	2.1898	20 27 24.1	0.989
18	5 38 12.24	2.1872	20 26 21.7	1.091
19	5 40 23.39	2.1845	20 25 13.2	1.192
20	5 42 34.38	2.1819	20 23 58.6	1.293
21	5 44 45.21	2.1792	20 22 38.0	1.393
22	5 46 55.88	2.1765	20 21 11.4	1.493
23	5 49 6.39	2.1738	20 19 38.9	1.592
24	5 51 16.73	2.1711	N.20 18 0.4	1.691

TUESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 51 16.73	2.1711	N.20 18 0.4	1.691
1	5 53 26.91	2.1683	20 16 16.0	1.790
2	5 55 36.92	2.1655	20 14 25.6	1.888
3	5 57 46.76	2.1627	20 12 29.4	1.986
4	5 59 56.44	2.1599	20 10 27.3	2.083
5	6 2 5.95	2.1571	20 8 19.4	2.180
6	6 4 15.29	2.1543	20 6 5.7	2.277
7	6 6 24.46	2.1514	20 3 46.2	2.373
8	6 8 33.46	2.1486	20 1 21.0	2.468
9	6 10 42.29	2.1457	19 58 50.1	2.563
10	6 12 50.94	2.1428	19 56 13.5	2.657
11	6 14 59.42	2.1399	19 53 31.3	2.751
12	6 17 7.73	2.1370	19 50 43.4	2.844
13	6 19 15.86	2.1341	19 47 49.9	2.937
14	6 21 23.82	2.1312	19 44 50.9	3.030
15	6 23 31.60	2.1282	19 41 46.4	3.122
16	6 25 39.21	2.1253	19 38 36.3	3.213
17	6 27 46.64	2.1223	19 35 20.8	3.304
18	6 29 53.89	2.1193	19 31 59.8	3.394
19	6 32 0.96	2.1163	19 28 33.4	3.484
20	6 34 7.85	2.1134	19 25 1.7	3.573
21	6 36 14.56	2.1104	19 21 24.6	3.662
22	6 38 21.10	2.1075	19 17 42.2	3.751
23	6 40 27.46	2.1045	N.19 13 54.5	3.839

WEDNESDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 42 33.64	2.1015	N.19 10 1.5	3.926
1	6 44 39.64	2.0985	19 6 3.3	4.013
2	6 46 45.46	2.0955	19 1 59.9	4.099
3	6 48 51.10	2.0925	18 57 51.4	4.185
4	6 50 56.56	2.0896	18 53 37.7	4.270
5	6 53 1.84	2.0866	18 49 18.9	4.355
6	6 55 6.95	2.0836	18 44 55.1	4.439
7	6 57 11.88	2.0806	18 40 26.2	4.523
8	6 59 16.62	2.0777	18 35 52.3	4.606
9	7 1 21.19	2.0747	18 31 13.5	4.688
10	7 3 25.58	2.0718	18 26 29.7	4.770
11	7 5 29.79	2.0688	18 21 41.0	4.852
12	7 7 33.83	2.0658	18 16 47.5	4.933
13	7 9 37.68	2.0628	18 11 49.2	5.013
14	7 11 41.36	2.0599	18 6 46.0	5.093
15	7 13 44.86	2.0569	18 1 38.0	5.172
16	7 15 48.19	2.0540	17 56 25.3	5.251
17	7 17 51.34	2.0510	17 51 7.9	5.329
18	7 19 54.31	2.0481	17 45 45.8	5.407
19	7 21 57.10	2.0451	17 40 19.1	5.484
20	7 23 59.72	2.0422	17 34 47.7	5.561
21	7 26 2.17	2.0393	17 29 11.8	5.637
22	7 28 4.44	2.0364	17 23 31.3	5.712
23	7 30 6.54	2.0335	17 17 46.3	5.787
24	7 32 8.47	2.0306	N.17 11 56.9	5.861

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 17.					SATURDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 32 8.47	2.0306	N.17 11 56.9	5.861	0	9 6 40.29	1.9173	N.11 15 42.6	8.765
1	7 34 10.22	2.0278	17 6 3.0	5.935	1	9 8 35.28	1.9156	11 6 55.3	8.812
2	7 36 11.81	2.0250	17 0 4.7	6.008	2	9 10 30.16	1.9139	10 58 5.2	8.858
3	7 38 13.23	2.0222	16 54 2.1	6.080	3	9 12 24.95	1.9123	10 49 12.4	8.903
4	7 40 14.48	2.0194	16 47 55.1	6.152	4	9 14 19.64	1.9107	10 40 16.8	8.948
5	7 42 15.56	2.0166	16 41 43.8	6.224	5	9 16 14.24	1.9092	10 31 18.6	8.992
6	7 44 16.48	2.0138	16 35 28.2	6.295	6	9 18 8.74	1.9077	10 22 17.7	9.036
7	7 46 17.23	2.0111	16 29 8.3	6.366	7	9 20 3.15	1.9062	10 13 14.2	9.079
8	7 48 17.81	2.0083	16 22 44.3	6.436	8	9 21 57.48	1.9047	10 4 8.2	9.122
9	7 50 18.23	2.0056	16 16 16.1	6.505	9	9 23 51.72	1.9033	9 54 59.6	9.164
10	7 52 18.48	2.0029	16 9 43.8	6.574	10	9 25 45.88	1.9019	9 45 48.5	9.206
11	7 54 18.57	2.0002	16 3 7.3	6.642	11	9 27 39.96	1.9006	9 36 34.9	9.247
12	7 56 18.51	1.9975	15 56 26.8	6.709	12	9 29 33.95	1.8993	9 27 18.9	9.287
13	7 58 18.28	1.9948	15 49 42.3	6.776	13	9 31 27.87	1.8980	9 18 0.5	9.327
14	8 0 17.89	1.9922	15 42 53.7	6.842	14	9 33 21.71	1.8968	9 8 39.8	9.366
15	8 2 17.34	1.9896	15 36 1.2	6.908	15	9 35 15.48	1.8956	8 59 16.7	9.404
16	8 4 16.64	1.9870	15 29 4.7	6.973	16	9 37 9.18	1.8944	8 49 51.3	9.442
17	8 6 15.78	1.9844	15 22 4.3	7.038	17	9 39 2.81	1.8933	8 40 23.7	9.479
18	8 8 14.77	1.9819	15 15 0.1	7.102	18	9 40 56.37	1.8922	8 30 53.8	9.516
19	8 10 13.61	1.9794	15 7 52.0	7.166	19	9 42 49.87	1.8911	8 21 21.8	9.552
20	8 12 12.30	1.9769	15 0 40.2	7.229	20	9 44 43.30	1.8901	8 11 47.6	9.588
21	8 14 10.84	1.9744	14 53 24.6	7.292	21	9 46 36.67	1.8891	8 2 11.3	9.623
22	8 16 9.23	1.9719	14 46 5.2	7.354	22	9 48 29.99	1.8882	7 52 32.9	9.658
23	8 18 7.47	1.9694	N.14 38 42.1	7.415	23	9 50 23.25	1.8873	N. 7 42 52.4	9.692
	FRIDAY 18.					SUNDAY 20.			
0	8 20 5.56	1.9670	N.14 31 15.4	7.476	0	9 52 16.46	1.8864	N. 7 33 9.9	9.725
1	8 22 3.51	1.9646	14 23 45.1	7.536	1	9 54 9.62	1.8856	7 23 25.5	9.758
2	8 24 1.32	1.9622	14 16 11.1	7.596	2	9 56 2.73	1.8848	7 13 39.1	9.790
3	8 25 58.99	1.9599	14 8 33.5	7.655	3	9 57 55.79	1.8840	7 3 50.8	9.821
4	8 27 56.51	1.9576	14 0 52.5	7.713	4	9 59 48.81	1.8833	6 54 0.6	9.852
5	8 29 53.90	1.9553	13 53 8.0	7.771	5	10 1 41.79	1.8826	6 44 8.6	9.882
6	8 31 51.15	1.9531	13 45 20.0	7.829	6	10 3 34.73	1.8820	6 34 14.8	9.912
7	8 33 48.27	1.9509	13 37 28.6	7.886	7	10 5 27.63	1.8814	6 24 19.2	9.941
8	8 35 45.26	1.9487	13 29 33.7	7.942	8	10 7 20.50	1.8808	6 14 21.9	9.969
9	8 37 42.12	1.9465	13 21 35.5	7.998	9	10 9 13.34	1.8803	6 4 22.9	9.997
10	8 39 38.84	1.9443	13 13 34.0	8.053	10	10 11 6.14	1.8799	5 54 22.3	10.024
11	8 41 35.43	1.9422	13 5 29.2	8.108	11	10 12 58.92	1.8795	5 44 20.0	10.051
12	8 43 31.90	1.9401	12 57 21.1	8.162	12	10 14 51.68	1.8791	5 34 16.2	10.077
13	8 45 28.24	1.9380	12 49 9.8	8.215	13	10 16 44.42	1.8788	5 24 10.8	10.103
14	8 47 24.46	1.9360	12 40 55.3	8.268	14	10 18 37.13	1.8784	5 14 3.9	10.128
15	8 49 20.56	1.9340	12 32 37.7	9.320	15	10 20 29.82	1.8781	5 3 55.5	10.152
16	8 51 16.54	1.9320	12 24 16.9	8.372	16	10 22 22.50	1.8779	4 53 45.7	10.175
17	8 53 12.40	1.9301	12 15 53.0	8.423	17	10 24 15.17	1.8777	4 43 34.5	10.198
18	8 55 8.15	1.9282	12 7 26.1	8.473	18	10 26 7.83	1.8775	4 33 21.9	10.220
19	8 57 3.78	1.9263	11 58 56.2	8.523	19	10 28 0.48	1.8774	4 23 8.0	10.242
20	8 58 59.30	1.9244	11 50 23.3	8.573	20	10 29 53.12	1.8773	4 12 52.9	10.263
21	9 0 54.71	1.9226	11 41 47.5	8.622	21	10 31 45.76	1.8773	4 2 36.5	10.284
22	9 2 50.01	1.9208	11 33 8.7	8.670	22	10 33 38.40	1.8773	3 52 18.9	10.304
23	9 4 45.20	1.9190	11 24 27.1	8.718	23	10 35 31.04	1.8774	3 42 0.1	10.323
24	9 6 40.29	1.9173	N.11 15 42.6	8.765	24	10 37 23.69	1.8775	N. 3 31 40.1	10.342

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 21.					WEDNESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 37 23.69	1.8775	N. 3 31 40.1	10.342	0	12 8 25.63	1.9317	S. 4 53 38.7	10.446
1	10 39 16.35	1.8777	3 21 19.0	10.360	1	12 10 21.60	1.9338	5 4 5.0	10.431
2	10 41 9.01	1.8779	3 10 56.9	10.377	2	12 12 17.69	1.9360	5 14 30.4	10.415
3	10 43 1.69	1.8781	3 0 33.8	10.393	3	12 14 13.91	1.9382	5 24 54.8	10.398
4	10 44 54.38	1.8783	2 50 9.7	10.409	4	12 16 10.27	1.9405	5 35 18.2	10.380
5	10 46 47.09	1.8786	2 39 44.6	10.425	5	12 18 6.77	1.9428	5 45 40.5	10.362
6	10 48 39.82	1.8789	2 29 18.6	10.440	6	12 20 3.41	1.9451	5 56 1.6	10.343
7	10 50 32.57	1.8793	2 18 51.8	10.454	7	12 22 0.19	1.9475	6 6 21.5	10.322
8	10 52 25.34	1.8797	2 8 24.1	10.468	8	12 23 57.11	1.9499	6 16 40.2	10.301
9	10 54 18.14	1.8802	1 57 55.6	10.481	9	12 25 54.18	1.9524	6 26 57.6	10.279
10	10 56 10.97	1.8807	1 47 26.4	10.493	10	12 27 51.40	1.9549	6 37 13.7	10.257
11	10 58 3.83	1.8813	1 36 56.5	10.504	11	12 29 48.77	1.9574	6 47 28.5	10.234
12	10 59 56.73	1.8819	1 26 25.9	10.515	12	12 31 46.29	1.9600	6 57 41.8	10.210
13	11 1 49.67	1.8826	1 15 54.7	10.525	13	12 33 43.97	1.9626	7 7 53.7	10.185
14	11 3 42.64	1.8833	1 5 22.9	10.535	14	12 35 41.80	1.9653	7 18 4.0	10.159
15	11 5 35.66	1.8840	0 54 50.5	10.544	15	12 37 39.80	1.9680	7 28 12.8	10.133
16	11 7 28.72	1.8848	0 44 17.6	10.552	16	12 39 37.96	1.9707	7 38 19.9	10.106
17	11 9 21.83	1.8856	0 33 44.2	10.560	17	12 41 36.29	1.9735	7 48 25.4	10.077
18	11 11 14.99	1.8864	0 23 10.4	10.567	18	12 43 34.78	1.9763	7 58 29.2	10.048
19	11 13 8.20	1.8873	0 12 36.2	10.573	19	12 45 33.44	1.9792	8 8 31.2	10.018
20	11 15 1.47	1.8882	N. 0 2 1.7	10.578	20	12 47 32.28	1.9820	8 18 31.4	9.987
21	11 16 54.80	1.8892	S. 0 8 33.2	10.583	21	12 49 31.29	1.9849	8 28 29.7	9.956
22	11 18 48.18	1.8903	0 19 8.3	10.587	22	12 51 30.47	1.9879	8 38 26.1	9.924
23	11 20 41.63	1.8914	S. 0 29 43.7	10.591	23	12 53 29.83	1.9909	S. 8 48 20.5	9.891
	TUESDAY 22.					THURSDAY 24.			
0	11 22 35.15	1.8925	S. 0 40 19.2	10.594	0	12 55 29.38	1.9939	S. 8 58 13.0	9.857
1	11 24 28.73	1.8936	0 50 54.9	10.596	1	12 57 29.10	1.9970	9 8 3.4	9.822
2	11 26 22.38	1.8948	1 1 30.7	10.597	2	12 59 29.01	2.0001	9 17 51.7	9.786
3	11 28 16.11	1.8961	1 12 6.6	10.598	3	13 1 29.10	2.0032	9 27 37.8	9.750
4	11 30 9.91	1.8974	1 22 42.5	10.598	4	13 3 29.39	2.0063	9 37 21.7	9.713
5	11 32 3.79	1.8987	1 33 18.4	10.597	5	13 5 29.87	2.0095	9 47 3.4	9.675
6	11 33 57.75	1.9000	1 43 54.2	10.596	6	13 7 30.53	2.0127	9 56 42.7	9.636
7	11 35 51.79	1.9014	1 54 29.9	10.594	7	13 9 31.39	2.0159	10 6 19.7	9.596
8	11 37 45.92	1.9028	2 5 5.5	10.591	8	13 11 32.44	2.0192	10 15 54.2	9.555
9	11 39 40.14	1.9043	2 15 40.9	10.588	9	13 13 33.69	2.0225	10 25 26.3	9.513
10	11 41 34.44	1.9058	2 26 16.0	10.583	10	13 15 35.14	2.0258	10 34 55.8	9.471
11	11 43 28.84	1.9074	2 36 50.9	10.578	11	13 17 36.79	2.0292	10 44 22.8	9.428
12	11 45 23.33	1.9090	2 47 25.4	10.572	12	13 19 38.64	2.0326	10 53 47.2	9.384
13	11 47 17.92	1.9107	2 57 59.6	10.566	13	13 21 40.70	2.0360	11 3 8.9	9.339
14	11 49 12.62	1.9124	3 8 33.3	10.559	14	13 23 42.96	2.0395	11 12 27.9	9.293
15	11 51 7.42	1.9142	3 19 6.6	10.551	15	13 25 45.43	2.0430	11 21 44.1	9.246
16	11 53 2.32	1.9160	3 29 39.4	10.542	16	13 27 48.12	2.0465	11 30 57.4	9.198
17	11 54 57.33	1.9178	3 40 11.7	10.533	17	13 29 51.02	2.0501	11 40 7.8	9.149
18	11 56 52.45	1.9196	3 50 43.4	10.523	18	13 31 54.13	2.0536	11 49 15.3	9.100
19	11 58 47.68	1.9215	4 1 14.4	10.512	19	13 33 57.45	2.0572	11 58 19.8	9.050
20	12 0 43.03	1.9234	4 11 44.8	10.500	20	13 36 0.99	2.0608	12 7 21.3	8.999
21	12 2 38.50	1.9254	4 22 14.5	10.488	21	13 38 4.75	2.0645	12 16 19.7	8.947
22	12 4 34.08	1.9275	4 32 43.4	10.475	22	13 40 8.73	2.0681	12 25 14.9	8.893
23	12 6 29.79	1.9296	4 43 11.5	10.461	23	13 42 12.93	2.0718	12 34 6.9	8.839
24	12 8 25.63	1.9317	S. 4 53 38.7	10.446	24	13 44 17.35	2.0755	S. 12 42 55.6	8.784

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 44 17.35	2.0755	S. 12 42 55.6	8.784
1	13 46 21.99	2.0792	12 51 41.0	8.729
2	13 48 26.86	2.0830	13 0 23.1	8.673
3	13 50 31.96	2.0868	13 9 1.8	8.615
4	13 52 37.28	2.0906	13 17 36.9	8.556
5	13 54 42.83	2.0944	13 26 8.5	8.497
6	13 56 48.61	2.0982	13 34 36.6	8.437
7	13 58 54.62	2.1021	13 43 1.0	8.376
8	14 1 0.86	2.1059	13 51 21.7	8.314
9	14 3 7.33	2.1098	13 59 38.7	8.251
10	14 5 14.04	2.1137	14 7 51.9	8.188
11	14 7 20.98	2.1176	14 16 1.2	8.123
12	14 9 28.15	2.1215	14 24 6.6	8.057
13	14 11 35.56	2.1255	14 32 8.0	7.991
14	14 13 43.21	2.1295	14 40 5.5	7.924
15	14 15 51.10	2.1335	14 47 58.9	7.856
16	14 17 59.23	2.1375	14 55 48.2	7.787
17	14 20 7.60	2.1415	15 3 33.3	7.717
18	14 22 16.21	2.1455	15 11 14.2	7.646
19	14 24 25.06	2.1495	15 18 50.8	7.573
20	14 26 34.15	2.1535	15 26 23.0	7.500
21	14 28 43.48	2.1576	15 33 50.9	7.427
22	14 30 53.06	2.1616	15 41 14.3	7.353
23	14 33 2.88	2.1657	S. 15 48 33.2	7.277

SATURDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 35 12.94	2.1697	S. 15 55 47.6	7.200
1	14 37 23.25	2.1738	16 2 57.3	7.123
2	14 39 33.80	2.1778	16 10 2.4	7.045
3	14 41 44.59	2.1818	16 17 2.8	6.967
4	14 43 55.62	2.1858	16 23 58.4	6.887
5	14 46 6.89	2.1899	16 30 49.2	6.806
6	14 48 18.41	2.1939	16 37 35.1	6.724
7	14 50 30.17	2.1980	16 44 16.0	6.641
8	14 52 42.17	2.2020	16 50 52.0	6.557
9	14 54 54.41	2.2061	16 57 22.9	6.473
10	14 57 6.90	2.2101	17 3 48.8	6.388
11	14 59 19.63	2.2141	17 10 9.5	6.303
12	15 1 32.59	2.2181	17 16 25.1	6.216
13	15 3 45.80	2.2222	17 22 35.4	6.128
14	15 5 59.25	2.2262	17 28 40.4	6.039
15	15 8 12.94	2.2301	17 34 40.1	5.950
16	15 10 26.86	2.2341	17 40 34.4	5.860
17	15 12 41.02	2.2381	17 46 23.2	5.768
18	15 14 55.43	2.2421	17 52 6.6	5.676
19	15 17 10.07	2.2460	17 57 44.4	5.584
20	15 19 24.95	2.2499	18 3 16.7	5.491
21	15 21 40.06	2.2538	18 8 43.3	5.396
22	15 23 55.41	2.2577	18 14 4.2	5.301
23	15 26 10.99	2.2615	18 19 19.4	5.205
24	15 28 26.79	2.2654	S. 18 24 28.8	5.108

SUNDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 28 26.79	2.2654	S. 18 24 28.8	5.108
1	15 30 42.83	2.2692	18 29 32.3	5.010
2	15 32 59.10	2.2730	18 34 30.0	4.911
3	15 35 15.59	2.2768	18 39 21.7	4.812
4	15 37 32.31	2.2806	18 44 7.4	4.712
5	15 39 49.25	2.2843	18 48 47.1	4.611
6	15 42 6.42	2.2880	18 53 20.7	4.509
7	15 44 23.81	2.2917	18 57 48.2	4.407
8	15 46 41.42	2.2953	19 2 9.6	4.304
9	15 48 59.25	2.2989	19 6 24.7	4.200
10	15 51 17.29	2.3025	19 10 33.6	4.096
11	15 53 35.54	2.3060	19 14 36.2	3.991
12	15 55 54.01	2.3095	19 18 32.5	3.885
13	15 58 12.69	2.3130	19 22 22.4	3.778
14	16 0 31.57	2.3165	19 26 5.8	3.671
15	16 2 50.66	2.3199	19 29 42.8	3.563
16	16 5 9.96	2.3233	19 33 13.3	3.454
17	16 7 29.46	2.3266	19 36 37.2	3.344
18	16 9 49.15	2.3299	19 39 54.6	3.234
19	16 12 9.04	2.3332	19 43 5.3	3.123
20	16 14 29.13	2.3364	19 46 9.4	3.012
21	16 16 49.41	2.3396	19 49 6.8	2.900
22	16 19 9.88	2.3427	19 51 57.4	2.787
23	16 21 30.54	2.3458	S. 19 54 41.3	2.674

MONDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 23 51.38	2.3488	S. 19 57 18.3	2.560
1	16 26 12.40	2.3518	19 59 48.5	2.446
2	16 28 33.60	2.3548	20 2 11.8	2.331
3	16 30 54.98	2.3577	20 4 28.2	2.216
4	16 33 16.53	2.3605	20 6 37.7	2.100
5	16 35 38.25	2.3633	20 8 40.2	1.983
6	16 38 0.13	2.3661	20 10 35.7	1.866
7	16 40 22.18	2.3688	20 12 24.1	1.748
8	16 42 44.39	2.3715	20 14 5.5	1.630
9	16 45 6.76	2.3741	20 15 39.8	1.512
10	16 47 29.28	2.3766	20 17 6.9	1.393
11	16 49 51.95	2.3791	20 18 26.9	1.273
12	16 52 14.77	2.3815	20 19 39.7	1.153
13	16 54 37.73	2.3839	20 20 45.3	1.033
14	16 57 0.84	2.3863	20 21 43.6	0.912
15	16 59 24.09	2.3886	20 22 34.7	0.791
16	17 1 47.47	2.3908	20 23 18.5	0.670
17	17 4 10.98	2.3930	20 23 55.0	0.548
18	17 6 34.62	2.3951	20 24 24.2	0.426
19	17 8 58.39	2.3972	20 24 46.0	0.303
20	17 11 22.28	2.3992	20 25 0.5	0.180
21	17 13 46.29	2.4011	20 25 7.5	0.056
22	17 16 10.41	2.4030	20 25 7.2	0.067
23	17 18 34.64	2.4048	20 24 59.5	0.191
24	17 20 58.98	2.4065	S. 20 24 44.3	0.315

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 20 58.98	2.4065	S. 20 24 44.3	0.315
1	17 23 23.42	2.4082	20 24 21.6	0.440
2	17 25 47.96	2.4098	20 23 51.5	0.564
3	17 28 12.60	2.4114	20 23 13.9	0.689
4	17 30 37.33	2.4129	20 22 28.8	0.814
5	17 33 2.15	2.4144	20 21 36.2	0.939
6	17 35 27.05	2.4158	20 20 36.1	1.064
7	17 37 52.03	2.4171	20 19 28.5	1.190
8	17 40 17.10	2.4184	20 18 13.3	1.316
9	17 42 42.24	2.4196	20 16 50.6	1.442
10	17 45 7.45	2.4207	20 15 20.3	1.567
11	17 47 32.73	2.4218	20 13 42.5	1.693
12	17 49 58.07	2.4228	20 11 57.1	1.819
13	17 52 23.47	2.4237	20 10 4.1	1.946
14	17 54 48.92	2.4246	20 8 3.6	2.072
15	17 57 14.42	2.4256	20 5 55.5	2.198
16	17 59 39.98	2.4263	20 3 39.9	2.324
17	18 2 5.58	2.4270	20 1 16.7	2.449
18	18 4 31.22	2.4277	19 58 46.0	2.575
19	18 6 56.90	2.4283	19 56 7.7	2.702
20	18 9 22.62	2.4288	19 53 21.8	2.828
21	18 11 48.37	2.4293	19 50 28.4	2.953
22	18 14 14.14	2.4297	19 47 27.4	3.079
23	18 16 39.93	2.4301	S. 19 44 18.9	3.204

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 19 5.75	2.4304	S. 19 41 2.9	3.330
1	18 21 31.59	2.4307	19 37 39.3	3.455
2	18 23 57.43	2.4308	19 34 8.2	3.580
3	18 26 23.28	2.4309	19 30 29.6	3.705
4	18 28 49.14	2.4310	19 26 43.6	3.830
5	18 31 15.01	2.4311	19 22 50.1	3.954
6	18 33 40.87	2.4311	19 18 49.1	4.078
7	18 36 6.73	2.4310	19 14 40.7	4.202
8	18 38 32.59	2.4309	19 10 24.8	4.326
9	18 40 58.44	2.4307	19 6 1.5	4.449
10	18 43 24.27	2.4304	19 1 30.9	4.572
11	18 45 50.09	2.4301	18 56 52.9	4.694
12	18 48 15.89	2.4297	18 52 7.6	4.816
13	18 50 41.66	2.4293	18 47 15.0	4.938
14	18 53 7.41	2.4289	18 42 15.0	5.060
15	18 55 33.13	2.4284	18 37 7.7	5.182
16	18 57 58.82	2.4278	18 31 53.2	5.303
17	19 0 24.47	2.4272	18 26 31.4	5.423
18	19 2 50.09	2.4266	18 21 2.5	5.542
19	19 5 15.67	2.4260	18 15 26.4	5.661
20	19 7 41.21	2.4253	18 9 43.2	5.780
21	19 10 6.70	2.4245	18 3 52.8	5.898
22	19 12 32.15	2.4236	17 57 55.4	6.016
23	19 14 57.54	2.4227	17 51 50.9	6.133
24	19 17 22.88	2.4218	S. 17 45 39.4	6.250

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 17 22.88	2.4218	S. 17 45 39.4	6.250
1	19 19 48.16	2.4209	17 39 20.9	6.366
2	19 22 13.39	2.4200	17 32 55.5	6.482
3	19 24 38.56	2.4190	17 26 23.1	6.597
4	19 27 3.67	2.4180	17 19 43.9	6.711
5	19 29 28.72	2.4169	17 12 57.9	6.824
6	19 31 53.70	2.4158	17 6 5.0	6.937
7	19 34 18.61	2.4146	16 59 5.4	7.050
8	19 36 43.45	2.4135	16 51 59.0	7.162
9	19 39 8.22	2.4123	16 44 46.0	7.273
10	19 41 32.92	2.4111	16 37 26.3	7.383
11	19 43 57.54	2.4098	16 30 0.0	7.493
12	19 46 22.09	2.4085	16 22 27.2	7.601
13	19 48 46.56	2.4072	16 14 47.9	7.709
14	19 51 10.95	2.4059	16 7 2.1	7.816
15	19 53 35.26	2.4045	15 59 9.9	7.923
16	19 55 59.48	2.4031	15 51 11.4	8.028
17	19 58 23.62	2.4017	15 43 6.5	8.133
18	20 0 47.68	2.4003	15 34 55.4	8.237
19	20 3 11.65	2.3988	15 26 38.1	8.340
20	20 5 35.53	2.3973	15 18 14.6	8.442
21	20 7 59.32	2.3958	15 9 45.0	8.543
22	20 10 23.02	2.3943	15 1 9.4	8.644
23	20 12 46.63	2.3928	S. 14 52 27.7	8.744

FRIDAY, APRIL 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 15 10.15	2.3912	S. 14 43 40.1	8.842

PHASES OF THE MOON.

		d	h	m
☾	Last Quarter, . .	1	1	11.8
●	New Moon, . .	7	15	59.2
☽	First Quarter, . .	14	18	7.0
○	Full Moon, . . .	22	22	24.2
☾	Last Quarter, . .	30	10	20.1

		d	h
☾	Perigee, ...	6	13.7
☾	Apogee, ...	18	20.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Saturn	W.	53° 27′ 30″	2512	55° 8′ 27″	2496	56° 49′ 46″	2480	58° 31′ 28″	2463
	Spica	W.	48 46 1	2499	50 27 16	2485	52 8 51	2469	53 50 48	2454
	Mars	E.	44 3 2	2787	42 28 17	2775	40 53 16	2762	39 17 58	2749
	α Aquilæ	E.	54 19 36	3178	52 52 55	3189	51 26 33	3209	50 0 34	3231
	Venus	E.	55 29 1	2935	53 57 26	2919	52 25 31	2903	50 53 16	2888
	Sun	E.	90 37 12	2850	89 3 49	2834	87 30 5	2818	85 56 0	2801
2	Saturn	W.	67 5 40	2383	68 49 39	2367	70 34 1	2351	72 18 46	2335
	Spica	W.	62 25 55	2377	64 10 3	2362	65 54 33	2346	67 39 25	2331
	Jupiter	W.	26 50 46	2388	28 34 38	2373	30 18 52	2357	32 3 28	2342
	Venus	E.	43 7 13	2814	41 33 3	2799	39 58 34	2785	38 23 47	2772
	Sun	E.	78 0 11	2719	76 23 56	2702	74 47 19	2686	73 10 20	2669
3	Saturn	W.	81 8 11	2259	82 55 11	2244	84 42 33	2230	86 30 16	2215
	Spica	W.	76 29 17	2256	78 16 22	2241	80 3 48	2227	81 51 35	2212
	Jupiter	W.	40 52 5	2265	42 38 56	2251	44 26 8	2237	46 13 41	2222
	Antares	W.	31 28 31	2339	33 13 33	2318	34 59 6	2297	36 45 10	2277
	Sun	E.	64 59 58	2590	63 20 49	2574	61 41 19	2560	60 1 29	2545
4	Saturn	W.	95 34 3	2149	97 23 47	2137	99 13 50	2125	101 4 11	2115
	Spica	W.	90 55 43	2146	92 45 32	2134	94 35 40	2122	96 26 6	2111
	Jupiter	W.	55 16 43	2154	57 6 20	2142	58 56 15	2130	60 46 28	2118
	Antares	W.	45 42 21	2192	47 31 1	2176	49 20 4	2163	51 9 28	2149
	Sun	E.	51 37 22	2477	49 55 37	2465	48 13 35	2454	46 31 17	2442
5	Jupiter	W.	70 1 45	2068	71 53 33	2059	73 45 35	2052	75 37 49	2044
	Antares	W.	60 21 15	2092	62 12 27	2083	64 3 53	2074	65 55 32	2066
	Sun	E.	37 56 16	2400	36 12 41	2395	34 28 59	2390	32 45 10	2387
10	Sun	W.	32 6 47	2620	33 45 15	2634	35 23 24	2649	37 1 12	2666
	Aldebaran	E.	46 16 9	2279	44 29 39	2297	42 43 35	2316	40 57 59	2335
	Pollux	E.	88 50 4	2342	87 5 5	2358	85 20 30	2376	83 36 21	2394
11	Sun	W.	45 4 32	2753	46 40 1	2772	48 15 5	2792	49 49 44	2811
	Pollux	E.	75 2 17	2491	73 20 51	2512	71 39 54	2532	69 59 25	2553
	Regulus	E.	111 39 51	2425	109 56 52	2443	108 14 18	2461	106 32 10	2480
12	Sun	W.	57 36 43	2909	59 8 51	2927	60 40 35	2947	62 11 54	2966
	Pollux	E.	61 44 19	2660	60 6 46	2684	58 29 44	2706	56 53 12	2729
	Regulus	E.	98 8 1	2572	96 28 28	2591	94 49 21	2610	93 10 40	2628
13	Sun	W.	69 42 31	3061	71 11 28	3079	72 40 3	3097	74 8 16	3115
	α Arietis	W.	29 12 21	2903	30 44 36	2902	32 16 52	2904	33 49 6	2906
	Pollux	E.	48 58 15	2848	47 24 50	2873	45 51 57	2899	44 19 37	2926
	Regulus	E.	85 3 20	2718	83 27 4	2735	81 51 10	2752	80 15 39	2769
14	Sun	W.	81 24 6	3198	82 50 17	3214	84 16 9	3230	85 41 43	3244
	α Arietis	W.	41 28 51	2938	43 0 22	2946	44 31 43	2954	46 2 53	2963
	Regulus	E.	72 23 27	2848	70 50 2	2865	69 16 57	2878	67 44 10	2893
	Saturn	E.	120 45 13	2829	119 11 23	2843	117 37 51	2857	116 4 37	2869
15	Sun	W.	92 45 21	3313	94 9 18	3325	95 33 1	3337	96 56 30	3347
	α Arietis	W.	53 35 56	3007	55 6 0	3016	56 35 53	3024	58 5 36	3032
	Regulus	E.	60 4 42	2959	58 33 38	2971	57 2 49	2983	55 32 15	2994
	Saturn	E.	108 22 26	2930	106 50 45	2940	105 19 17	2951	103 48 3	2961

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Saturn	W.	60° 13′ 33″	2447	61° 56′ 1″	2431	63° 38′ 51″	2415	65° 22′ 4″	2399
	Spica	W.	55 33 6	2438	57 15 46	2424	58 58 47	2408	60 42 10	2393
	Mars	E.	37 42 23	2737	36 6 32	2725	34 30 26	2714	32 54 5	2704
	α Aquilæ	E.	48 35 1	3258	47 10 0	3290	45 45 37	3327	44 21 57	3371
	Venus	E.	49 20 42	2873	47 47 49	2858	46 14 36	2843	44 41 4	2828
	Sun	E.	84 21 33	2785	82 46 45	2768	81 11 35	2752	79 36 4	2735
2	Saturn	W.	74 3 54	2320	75 49 25	2304	77 35 18	2289	79 21 33	2274
	Spica	W.	69 24 39	2316	71 10 15	2300	72 56 14	2285	74 42 35	2271
	Jupiter	W.	33 48 26	2326	35 33 47	2311	37 19 30	2296	39 5 36	2280
	Venus	E.	36 48 43	2760	35 13 22	2747	33 37 44	2735	32 1 51	2725
	Sun	E.	71 32 59	2653	69 55 16	2638	68 17 12	2621	66 38 46	2606
3	Saturn	W.	88 18 21	2202	90 6 46	2188	91 55 32	2174	93 44 38	2162
	Spica	W.	83 39 44	2199	85 28 13	2185	87 17 3	2172	89 6 13	2159
	Jupiter	W.	48 1 36	2208	49 49 52	2194	51 38 29	2180	53 27 26	2167
	Antares	W.	38 31 43	2256	40 18 44	2241	42 6 11	2223	43 54 4	2207
	Sun	E.	58 21 18	2531	56 40 48	2517	54 59 58	2503	53 18 49	2490
4	Saturn	W.	102 54 48	2103	104 45 42	2094	106 36 51	2084	108 28 15	2075
	Spica	W.	98 16 49	2099	100 7 49	2089	101 59 5	2079	103 50 36	2070
	Jupiter	W.	62 36 59	2107	64 27 47	2097	66 18 51	2086	68 10 11	2077
	Antares	W.	52 59 13	2136	54 49 17	2124	56 39 39	2113	58 30 19	2102
	Sun	E.	44 48 43	2433	43 5 55	2424	41 22 54	2415	39 39 41	2407
5	Jupiter	W.	77 30 14	2038	79 22 49	2032	81 15 34	2026	83 8 27	2023
	Antares	W.	67 47 24	2050	69 39 26	2052	71 31 39	2046	73 24 1	2041
	Sun	E.	31 1 16	2384	29 17 19	2386	27 33 23	2387	25 49 30	2389
10	Sun	W.	38 38 38	2683	40 15 41	2699	41 52 22	2717	43 28 39	2735
	Aldebaran	E.	39 12 51	2355	37 28 11	2375	35 44 1	2396	34 0 20	2417
	Pollux	E.	81 52 38	2418	80 9 22	2432	78 26 33	2451	76 44 11	2471
11	Sun	W.	51 23 58	2830	52 57 47	2849	54 31 11	2869	56 4 10	2889
	Pollux	E.	68 19 25	2574	66 39 54	2596	65 0 53	2617	63 22 21	2639
	Regulus	E.	104 50 28	2499	103 9 13	2517	101 28 23	2535	99 47 59	2554
12	Sun	W.	63 42 49	2985	65 13 20	3005	66 43 27	3023	68 13 11	3043
	Pollux	E.	55 17 11	2753	53 41 41	2775	52 6 41	2799	50 32 12	2824
	Regulus	E.	91 32 23	2646	89 54 31	2664	88 17 3	2682	86 39 59	2701
13	Sun	W.	75 36 7	3133	77 3 37	3149	78 30 47	3167	79 57 36	3183
	α Arietis	W.	35 21 17	2911	36 53 22	2916	38 25 20	2923	39 57 10	2930
	Pollux	E.	42 47 51	2954	41 16 40	2981	39 46 4	3011	38 16 5	3042
	Regulus	E.	78 40 30	2785	77 5 43	2801	75 31 17	2818	73 57 12	2833
14	Sun	W.	87 7 0	3250	88 31 59	3273	89 56 42	3287	91 21 9	3300
	α Arietis	W.	47 33 52	2972	49 4 40	2981	50 35 16	2990	52 5 41	2998
	Regulus	E.	66 11 42	2906	64 39 31	2920	63 7 38	2934	61 36 2	2946
	Saturn	E.	114 31 39	2883	112 58 58	2894	111 26 32	2907	109 54 22	2918
15	Sun	W.	98 19 47	3356	99 42 51	3369	101 5 43	3379	102 28 23	3388
	α Arietis	W.	59 35 8	3040	61 4 31	3048	62 33 44	3056	64 2 48	3062
	Regulus	E.	54 1 55	3005	52 31 49	3017	51 1 57	3027	49 32 18	3037
	Saturn	E.	102 17 1	2970	100 46 11	2980	99 15 33	2989	97 45 6	2997

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
16	Sun	W.	103° 50′ 53″	3397	105° 13′ 13″	3406	106° 35′ 23″	3414	107° 57′ 24″	3421
	α Arietis	W.	65 31 44	3069	67 0 31	3075	68 29 11	3081	69 57 44	3087
	Aldebaran	W.	32 6 1	3043	33 35 20	3049	35 4 32	3054	36 33 38	3059
	Regulus	E.	48 2 51	3047	46 33 37	3056	45 4 34	3066	43 35 43	3075
	Saturn	E.	96 14 50	3005	94 44 43	3013	93 14 46	3020	91 44 58	3026
	Spica	E.	101 42 33	3009	100 12 32	3018	98 42 41	3025	97 12 59	3031
17	Sun	W.	114 45 34	3451	116 6 53	3456	117 28 6	3461	118 49 14	3464
	α Arietis	W.	77 18 48	3111	78 46 44	3114	80 14 36	3118	81 42 24	3120
	Aldebaran	W.	43 57 45	3079	45 26 20	3082	46 54 52	3085	48 23 20	3087
	Saturn	E.	84 17 50	3053	82 48 43	3058	81 19 42	3062	79 50 46	3065
	Spica	E.	89 46 23	3059	88 17 23	3063	86 48 28	3066	85 19 37	3070
18	α Arietis	W.	89 0 41	3130	90 28 14	3131	91 55 46	3132	93 23 17	3132
	Aldebaran	W.	55 45 3	3096	57 13 19	3095	58 41 35	3096	60 9 51	3095
	Saturn	E.	72 26 59	3077	70 58 21	3078	69 29 44	3079	68 1 9	3079
	Spica	E.	77 56 16	3081	76 27 43	3081	74 59 10	3082	73 30 38	3082
	Jupiter	E.	113 40 18	3074	112 11 37	3075	110 42 57	3076	109 14 18	3075
19	α Arietis	W.	100 40 55	3129	102 8 29	3128	103 36 5	3126	105 3 43	3125
	Aldebaran	W.	67 31 22	3088	68 59 46	3087	70 28 12	3084	71 56 41	3082
	Saturn	E.	60 38 17	3078	59 9 41	3077	57 41 3	3076	56 12 24	3074
	Spica	E.	66 7 51	3078	64 39 14	3075	63 10 34	3073	61 41 52	3070
	Jupiter	E.	101 50 51	3070	100 22 5	3068	98 53 16	3066	97 24 25	3063
	Antares	E.	111 31 52	3105	110 3 49	3103	108 35 43	3101	107 7 34	3097
20	Aldebaran	W.	79 20 3	3064	80 48 57	3060	82 17 56	3056	83 47 0	3051
	Pollux	W.	38 4 0	3271	39 28 45	3254	40 53 50	3238	42 19 14	3222
	Saturn	E.	48 48 38	3065	47 19 45	3062	45 50 49	3060	44 21 50	3058
	Spica	E.	54 17 26	3054	52 48 20	3050	51 19 9	3045	49 49 52	3041
	Jupiter	E.	89 59 12	3046	88 29 56	3042	87 0 35	3037	85 31 8	3032
	Antares	E.	99 45 49	3079	98 17 14	3074	96 48 33	3070	95 19 47	3066
21	Aldebaran	W.	91 13 53	3025	92 43 35	3018	94 13 25	3013	95 43 22	3006
	Pollux	W.	49 30 28	3158	50 57 28	3145	52 24 43	3134	53 52 11	3123
	Saturn	E.	36 56 17	3048	35 27 4	3047	33 57 49	3046	32 28 33	3045
	Spica	E.	42 21 58	3015	40 52 4	3009	39 22 2	3003	37 51 53	2997
	Jupiter	E.	78 2 20	3005	76 32 14	3000	75 2 1	2993	73 31 40	2987
	Antares	E.	87 54 28	3039	86 25 4	3034	84 55 33	3028	83 25 55	3022
22	Aldebaran	W.	103 15 5	2974	104 45 50	2968	106 16 43	2961	107 47 45	2954
	Pollux	W.	61 12 47	3072	62 41 31	3061	64 10 28	3052	65 39 37	3043
	Jupiter	E.	65 57 55	2954	64 26 44	2947	62 55 25	2940	61 23 57	2933
	Antares	E.	75 55 53	2991	74 25 29	2984	72 54 56	2978	71 24 16	2971
23	Pollux	W.	73 8 11	2997	74 38 28	2988	76 8 56	2979	77 39 35	2970
	Regulus	W.	36 8 38	2963	37 39 37	2951	39 10 51	2940	40 42 19	2930
	Jupiter	E.	53 44 17	2895	52 11 52	2887	50 39 17	2880	49 6 32	2873
	Antares	E.	63 48 49	2938	62 17 18	2931	60 45 39	2925	59 13 52	2918
24	Pollux	W.	85 15 32	2927	86 47 16	2920	88 19 10	2912	89 51 14	2903
	Regulus	W.	48 22 54	2880	49 55 39	2870	51 28 36	2860	53 1 46	2851
	Jupiter	E.	41 20 17	2832	39 46 31	2825	38 12 35	2816	36 38 28	2808
	Antares	E.	51 32 51	2887	50 0 15	2880	48 27 31	2874	46 54 39	2869
	α Aquilæ	E.	103 14 16	3274	101 49 34	3261	100 24 37	3248	98 59 25	3237

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
16	Sun	W.	109° 19′ 17″	3428	110° 41′ 2″	3435	112° 2′ 39″	3441	113° 24′ 9″	3446
	a Arietis	W.	71 26 9	3092	72 54 28	3098	74 22 40	3102	75 50 47	3107
	Aldebaran	W.	38 2 38	3064	39 31 32	3068	41 0 21	3072	42 29 5	3075
	Regulus	E.	42 7 3	3084	40 38 34	3093	39 10 16	3102	37 42 9	3110
	Saturn	E.	90 15 18	3033	88 45 46	3039	87 16 21	3043	85 47 2	3049
	Spica	E.	95 43 25	3038	94 13 59	3044	92 44 41	3049	91 15 29	3054
17	Sun	W.	120 10 18	3468	121 31 18	3471	122 52 15	3473	124 13 9	3476
	a Arietis	W.	83 10 9	3123	84 37 51	3125	86 5 30	3128	87 33 6	3129
	Aldebaran	W.	49 51 45	3090	51 20 7	3091	52 48 27	3092	54 16 46	3094
	Saturn	E.	78 21 54	3069	76 53 6	3071	75 24 21	3073	73 55 39	3075
	Spica	E.	83 50 51	3073	82 22 8	3075	80 53 28	3078	79 24 51	3079
18	a Arietis	W.	94 50 48	3132	96 18 19	3132	97 45 50	3131	99 13 22	3130
	Aldebaran	W.	61 38 7	3094	63 6 24	3093	64 34 42	3092	66 3 1	3091
	Saturn	E.	66 32 34	3080	65 4 0	3080	63 35 26	3080	62 6 52	3079
	Spica	E.	72 2 6	3082	70 33 34	3081	69 5 1	3080	67 36 27	3078
	Jupiter	E.	107 45 38	3075	106 16 58	3074	104 48 17	3073	103 19 35	3072
19	a Arietis	W.	106 31 22	3123	107 59 4	3121	109 26 48	3119	110 54 35	3115
	Aldebaran	W.	73 25 13	3078	74 53 49	3075	76 22 29	3071	77 51 14	3068
	Saturn	E.	54 43 43	3073	53 15 0	3071	51 46 15	3069	50 17 28	3067
	Spica	E	60 13 6	3068	58 44 17	3065	57 15 24	3061	55 46 27	3058
	Jupiter	E.	95 55 30	3060	94 26 31	3057	92 57 29	3054	91 28 23	3050
	Antares	E.	105 39 21	3094	104 11 4	3091	102 42 44	3087	101 14 19	3083
20	Aldebaran	W.	85 16 10	3046	86 45 26	3041	88 14 48	3035	89 44 17	3030
	Pollux	W.	43 44 56	3209	45 10 55	3194	46 37 11	3182	48 3 42	3169
	Saturn	E.	42 52 49	3056	41 23 45	3063	39 54 38	3052	38 25 29	3049
	Spica	E.	48 20 30	3036	46 51 2	3030	45 21 27	3026	43 51 46	3020
	Jupiter	E	84 1 35	3027	82 31 56	3022	81 2 11	3017	79 32 19	3011
	Antares	E.	93 50 56	3061	92 21 59	3056	90 52 55	3051	89 23 45	3045
21	Aldebaran	W.	97 13 27	3000	98 43 40	2994	100 14 0	2988	101 44 28	2981
	Pollux	W.	55 19 53	3112	56 47 48	3102	58 15 55	3091	59 44 15	3082
	Saturn	E.	30 59 16	3046	29 30 0	3047	28 0 46	3051	26 31 36	3057
	Spica	E.	36 21 36	2991	34 51 12	2985	33 20 40	2978	31 50 0	2971
	Jupiter	E.	72 1 11	2981	70 30 35	2974	68 59 50	2968	67 28 57	2961
	Antares	E.	81 56 10	3016	80 26 17	3010	78 56 17	3004	77 26 9	2997
22	Aldebaran	W.	109 18 56	2946	110 50 16	2940	112 21 44	2933	113 53 21	2926
	Pollux	W.	67 8 57	3034	68 38 28	3024	70 8 11	3015	71 38 5	3005
	Jupiter	E.	59 52 20	2926	58 20 34	2918	56 48 38	2910	55 16 32	2903
	Antares	E.	69 53 27	2965	68 22 30	2958	66 51 25	2951	65 20 11	2945
23	Pollux	W.	79 10 25	2962	80 41 26	2954	82 12 37	2945	83 43 59	2936
	Regulus	W.	42 14 0	2919	43 45 55	2909	45 18 2	2899	46 50 22	2890
	Jupiter	E.	47 33 38	2864	46 0 33	2856	44 27 18	2848	42 53 53	2840
	Antares	E.	57 41 56	2912	56 9 52	2905	54 37 40	2899	53 5 20	2892
24	Pollux	W.	91 23 29	2896	92 55 53	2887	94 28 28	2880	96 1 13	2872
	Regulus	W.	54 35 8	2842	56 8 42	2832	57 42 28	2823	59 16 26	2814
	Jupiter	E.	35 4 10	2799	33 29 41	2792	31 55 2	2783	30 20 12	2774
	Antares	E.	45 21 40	2863	43 48 34	2859	42 15 22	2853	40 42 3	2849
	a Aquilæ	E.	97 34 0	3225	96 8 21	3215	94 42 30	3206	93 16 27	3195

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
24	Mars	E.	115° 24′ 22″	3145	113° 57′ 7″	3137	112° 29′ 42″	3128	111° 2′ 6″	3118
25	Pollux	W.	97 34 8	2864	99 7 13	2857	100 40 27	2849	102 13 51	2842
	Regulus	W.	60 50 36	2805	62 24 58	2796	63 59 31	2787	65 34 16	2778
	Saturn	W.	14 1 6	3092	15 29 25	3026	16 59 6	2970	18 29 56	2925
	Antares	E.	39 8 39	2845	37 35 10	2842	36 1 36	2839	34 27 59	2837
	a Aquilæ	E.	91 50 12	3186	90 23 46	3178	88 57 10	3170	87 30 25	3162
	Mars	E.	103 41 16	3073	102 12 33	3063	100 43 38	3055	99 14 33	3046
26	Regulus	W.	73 31 1	2732	75 6 58	2724	76 43 6	2714	78 19 27	2705
	Saturn	W.	26 15 36	2787	27 50 21	2767	29 25 32	2750	31 1 6	2734
	a Aquilæ	E.	80 14 34	3133	78 47 4	3129	77 19 30	3125	75 51 51	3122
	Mars	E.	91 46 16	2999	90 16 2	2990	88 45 37	2981	87 15 0	2972
	Fomalhaut	E.	108 47 40	3236	107 22 13	3218	105 56 25	3201	104 30 17	3184
	Venus	E.	115 0 11	3175	113 33 32	3164	112 6 40	3154	110 39 36	3144
27	Regulus	W.	86 24 14	2660	88 1 48	2650	89 39 35	2640	91 17 35	2632
	Saturn	W.	39 3 54	2664	40 41 22	2652	42 19 6	2640	43 57 7	2628
	Spica	W.	32 29 38	2639	34 7 40	2629	35 45 55	2621	37 24 22	2611
	a Aquilæ	E.	68 33 6	3121	67 5 22	3124	65 37 42	3128	64 10 6	3132
	Mars	E.	79 39 1	2925	78 7 14	2916	76 35 15	2906	75 3 4	2897
	Fomalhaut	E.	97 15 3	3114	95 47 11	3103	94 19 5	3091	92 50 45	3081
	Venus	E.	103 21 10	3092	101 52 51	3082	100 24 19	3071	98 55 34	3061
28	Regulus	W.	99 30 43	2584	101 10 0	2575	102 49 29	2566	104 29 11	2556
	Saturn	W.	52 11 9	2571	53 50 44	2560	55 30 34	2549	57 10 39	2538
	Spica	W.	45 39 51	2564	47 19 36	2553	48 59 35	2543	50 39 48	2534
	a Aquilæ	E.	56 54 8	3180	55 27 35	3196	54 1 21	3214	52 35 28	3234
	Mars	E.	67 19 7	2849	65 45 43	2839	64 12 6	2830	62 38 17	2821
	Fomalhaut	E.	85 26 6	3037	83 56 39	3030	82 27 4	3024	80 57 21	3018
	Venus	E.	91 28 36	3008	89 58 33	2997	88 28 16	2986	86 57 46	2975
	Sun	E.	120 34 50	2909	119 2 43	2898	117 30 21	2887	115 57 45	2876
29	Saturn	W.	65 34 54	2484	67 16 30	2472	68 58 22	2462	70 40 29	2451
	Spica	W.	59 4 19	2483	60 45 56	2473	62 27 47	2462	64 9 53	2452
	Mars	E.	54 46 10	2774	53 11 8	2765	51 35 54	2756	50 0 28	2747
	Fomalhaut	E.	73 27 26	3004	71 57 18	3004	70 27 10	3005	68 57 3	3008
	Venus	E.	79 21 50	2920	77 49 57	2909	76 17 50	2898	74 45 29	2887
	Sun	E.	108 11 11	2820	106 37 9	2808	105 2 52	2797	103 28 20	2786
30	Saturn	W.	79 14 53	2397	80 58 32	2387	82 42 26	2376	84 26 35	2365
	Spica	W.	72 44 4	2400	74 27 39	2389	76 11 29	2379	77 55 34	2368
	Jupiter	W.	37 24 40	2384	39 8 37	2373	40 52 51	2362	42 37 21	2352
	Antares	W.	27 51 20	2514	29 32 14	2491	31 13 40	2470	32 55 35	2451
	Mars	E.	42 0 33	2707	40 24 3	2701	38 47 24	2695	37 10 37	2689
	Fomalhaut	E.	61 27 48	3041	59 58 26	3053	58 29 19	3068	57 0 30	3085
	Venus	E.	67 0 12	2832	65 26 26	2821	63 52 26	2811	62 18 12	2800
	Sun	E.	95 31 56	2729	93 55 54	2716	92 19 36	2705	90 43 3	2695
31	Saturn	W.	93 11 9	2313	94 56 49	2304	96 42 43	2294	98 28 51	2284
	Spica	W.	86 39 47	2317	88 25 22	2307	90 11 12	2296	91 57 18	2285
	Jupiter	W.	51 23 35	2299	53 9 36	2289	54 55 51	2279	56 42 21	2269
	Antares	W.	41 31 18	2373	43 15 32	2359	45 0 6	2346	46 44 59	2333
	Venus	E.	54 23 37	2749	52 48 2	2739	51 12 14	2730	49 36 14	2721
	Sun	E.	82 36 33	2638	80 58 29	2627	79 20 11	2616	77 41 38	2605

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
24	Mars	E.	109° 34′ 18″	3109	108° 6′ 19″	3100	106° 38′ 9″	3091	105° 9′ 48″	3082
25	Pollux	W.	103 47 25	2835	105 21 8	2828	106 55 0	2821	108 29 1	2813
	Regulus	W.	67 9 13	2769	68 44 22	2760	70 19 43	2750	71 55 16	2741
	Saturn	W.	20 1 43	2869	21 34 16	2857	23 7 30	2831	24 41 18	2806
	Antares	E.	32 54 19	2836	31 20 38	2836	29 46 57	2838	28 13 19	2842
	a Aquilæ	E.	86 3 30	3155	84 36 27	3148	83 9 16	3143	81 41 58	3138
	Mars	E.	97 45 16	3036	96 15 48	3027	94 46 9	3018	93 16 18	3009
26	Regulus	W.	79 56 0	2696	81 32 45	2687	83 9 43	2678	84 46 52	2669
	Saturn	W.	32 37 1	2719	34 13 16	2704	35 49 51	2690	37 26 44	2678
	a Aquilæ	E.	74 24 9	3120	72 56 24	3119	71 28 38	3119	70 0 52	3119
	Mars	E.	85 44 12	2962	84 13 12	2953	82 42 0	2948	81 10 36	2935
	Fomalhaut	E.	103 3 49	3169	101 37 3	3154	100 9 59	3141	98 42 39	3128
	Venus	E.	109 12 20	3133	107 44 51	3124	106 17 10	3113	104 49 16	3103
27	Regulus	W.	92 55 47	2622	94 34 12	2613	96 12 49	2604	97 51 39	2593
	Saturn	W.	45 35 24	2616	47 13 57	2605	48 52 45	2593	50 31 49	2582
	Spica	W.	39 3 2	2601	40 41 55	2593	42 21 0	2583	44 0 19	2573
	a Aquilæ	E.	62 42 35	3138	61 15 12	3147	59 47 59	3156	58 20 57	3167
	Mars	E.	73 30 41	2887	71 58 6	2877	70 25 18	2869	68 52 19	2859
	Fomalhaut	E.	91 22 12	3071	89 53 27	3062	88 24 31	3053	86 55 24	3044
	Venus	E.	97 26 37	3051	95 57 27	3039	94 28 3	3029	92 58 26	3018
28	Regulus	W.	106 9 7	2546	107 49 16	2537	109 29 38	2527	111 10 14	2517
	Saturn	W.	58 51 0	2527	60 31 36	2516	62 12 27	2505	63 53 33	2494
	Spica	W.	52 20 14	2524	54 0 54	2514	55 41 48	2504	57 22 56	2493
	a Aquilæ	E.	51 9 59	3258	49 44 58	3286	48 20 30	3318	46 56 39	3353
	Mars	E.	61 4 16	2811	59 30 3	2801	57 55 37	2793	56 21 0	2783
	Fomalhaut	E.	79 27 31	3014	77 57 36	3010	76 27 36	3007	74 57 32	3005
	Venus	E.	85 27 2	2965	83 56 5	2954	82 24 54	2942	80 53 29	2931
	Sun	E.	114 24 55	2865	112 51 51	2853	111 18 32	2842	109 44 59	2831
29	Saturn	W.	72 22 51	2441	74 5 28	2429	75 48 21	2419	77 31 29	2408
	Spica	W.	65 52 14	2442	67 34 49	2431	69 17 39	2421	71 0 44	2410
	Mars	E.	48 24 51	2738	46 49 2	2731	45 13 3	2723	43 36 53	2716
	Fomalhaut	E.	67 27 0	3011	65 57 1	3016	64 27 8	3022	62 57 23	3030
	Venus	E.	73 12 54	2876	71 40 5	2865	70 7 1	2855	68 33 44	2843
	Sun	E.	101 53 34	2774	100 18 32	2763	98 43 15	2751	97 7 43	2740
30	Saturn	W.	86 11 0	2355	87 55 40	2344	89 40 35	2334	91 25 45	2324
	Spica	W.	79 39 55	2357	81 24 31	2348	83 9 21	2337	84 54 27	2327
	Jupiter	W.	44 22 5	2341	46 7 5	2331	47 52 20	2320	49 37 50	2310
	Antares	W.	34 37 57	2434	36 20 43	2417	38 3 53	2402	39 47 25	2387
	Mars	E.	35 33 43	2685	33 56 43	2682	32 19 39	2680	30 42 32	2678
	Fomalhaut	E.	55 32 2	3105	54 3 59	3129	52 36 25	3157	51 9 24	3187
	Venus	E.	60 43 44	2789	59 9 2	2779	57 34 7	2769	55 58 59	2759
	Sun	E.	89 6 16	2683	87 29 13	2672	85 51 55	2660	84 14 22	2649
31	Saturn	W.	100 15 14	2274	102 1 51	2266	103 48 41	2256	105 35 45	2247
	Spica	W.	93 43 39	2274	95 30 16	2264	97 17 9	2253	99 4 18	2243
	Jupiter	W.	58 29 6	2259	60 16 6	2249	62 3 20	2240	63 50 48	2230
	Antares	W.	48 30 10	2321	50 15 39	2309	52 1 26	2297	53 47 30	2286
	Venus	E.	48 0 2	2712	46 23 38	2704	44 47 4	2697	43 10 20	2689
	Sun	E.	76 2 50	2595	74 23 48	2584	72 44 31	2574	71 5 0	2564

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Fri.	1	0 44 13.02	9.102	N. 4 45 20.7	57.74	16 1.85	64.50	3 49.10	0.755
Sat.	2	0 47 51.49	9.108	5 8 23.7	57.52	16 1.57	64.51	3 31.07	0.749
Sun.	3	0 51 30.11	9.114	5 31 21.4	57.29	16 1.29	64.53	3 13.19	0.742
Mon.	4	0 55 8.91	9.121	5 54 13.2	57.04	16 1.01	64.56	2 55.48	0.734
Tues.	5	0 58 47.90	9.129	6 16 58.8	56.78	16 0.73	64.60	2 37.97	0.726
Wed.	6	1 2 27.09	9.138	6 39 37.9	56.50	16 0.45	64.63	2 20.66	0.717
Thur.	7	1 6 6.49	9.147	7 2 10.3	56.21	16 0.18	64.66	2 3.55	0.708
Fri.	8	1 9 46.11	9.157	7 24 35.5	55.90	15 59.91	64.70	1 46.65	0.698
Sat.	9	1 13 25.98	9.167	7 46 53.1	55.58	15 59.64	64.74	1 30.01	0.687
Sun.	10	1 17 6.10	9.178	8 9 3.0	55.25	15 59.37	64.78	1 13.63	0.676
Mon.	11	1 20 46.49	9.190	8 31 4.6	54.90	15 59.10	64.82	0 57.51	0.665
Tues.	12	1 24 27.15	9.202	8 52 57.5	54.53	15 58.84	64.86	0 41.66	0.653
Wed.	13	1 28 8.12	9.215	9 14 41.5	54.15	15 58.58	64.91	0 26.12	0.640
Thur.	14	1 31 49.40	9.228	9 36 16.3	53.76	15 58.32	64.96	0 10.89	0.627
Fri.	15	1 35 30.99	9.242	9 57 41.5	53.35	15 58.06	65.01	0 4.02	0.614
Sat.	16	1 39 12.93	9.257	10 18 56.6	52.93	15 57.80	65.06	0 18.58	0.599
Sun.	17	1 42 55.24	9.272	10 40 1.7	52.50	15 57.54	65.12	0 32.79	0.584
Mon.	18	1 46 37.92	9.288	11 0 56.5	52.05	15 57.28	65.18	0 46.63	0.568
Tues.	19	1 50 21.00	9.305	11 21 40.3	51.59	15 57.02	65.24	1 0.07	0.551
Wed.	20	1 54 4.49	9.323	11 42 12.8	51.12	15 56.77	65.30	1 13.10	0.533
Thur.	21	1 57 48.41	9.341	12 2 33.8	50.63	15 56.51	65.36	1 25.70	0.515
Fri.	22	2 1 32.78	9.360	12 22 42.8	50.13	15 56.25	65.43	1 37.85	0.496
Sat.	23	2 5 17.60	9.379	12 42 39.5	49.62	15 55.99	65.50	1 49.56	0.477
Sun.	24	2 9 2.90	9.399	13 2 23.8	49.09	15 55.74	65.57	2 0.78	0.457
Mon.	25	2 12 48.69	9.420	13 21 55.3	48.55	15 55.49	65.64	2 11.50	0.437
Tues.	26	2 16 34.97	9.441	13 41 14.0	48.00	15 55.24	65.71	2 21.75	0.416
Wed.	27	2 20 21.78	9.462	14 0 19.3	47.43	15 54.99	65.78	2 31.47	0.394
Thur.	28	2 24 9.12	9.484	14 19 11.0	46.86	15 54.74	65.86	2 40.66	0.372
Fri.	29	2 27 57.00	9.507	14 37 48.5	46.26	15 54.49	65.94	2 49.31	0.349
Sat.	30	2 31 45.42	9.530	14 56 11.7	45.66	15 54.25	66.02	2 57.42	0.326
Sun.	31	2 35 34.40	9.553	N.15 14 20.1	45.04	15 54.01	66.10	3 4.98	0.303

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from* / *added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Fri.	1	0 44 12.44	9.102	N. 4 45 17.0	57.74	3 49.15	0.755	0 40 23.29
Sat.	2	0 47 50.96	9.108	5 8 20.3	57.52	3 31.12	0.749	0 44 19.84
Sun.	3	0 51 29.63	9.114	5 31 18.3	57.29	3 13.24	0.742	0 48 16.39
Mon.	4	0 55 8.47	9.121	5 54 10.4	57.04	2 55.52	0.734	0 52 12.95
Tues.	5	0 58 47.50	9.129	6 16 56.3	56.78	2 38.00	0.726	0 56 9.50
Wed.	6	1 2 26.74	9.138	6 39 35.7	56.50	2 20.69	0.717	1 0 6.05
Thur.	7	1 6 6.18	9.147	7 2 8.4	56.21	2 3.58	0.708	1 4 2.60
Fri.	8	1 9 45.84	9.157	7 24 33.9	55.90	1 46.68	0.698	1 7 59.16
Sat.	9	1 13 25.75	9.167	7 46 51.8	55.58	1 30.04	0.687	1 11 55.71
Sun.	10	1 17 5.91	9.178	8 9 1.9	55.25	1 13.65	0.676	1 15 52.26
Mon.	11	1 20 46.34	9.190	8 31 3.8	54.90	0 57.53	0.665	1 19 48.81
Tues.	12	1 24 27.04	9.202	8 52 57.0	54.53	0 41.67	0.653	1 23 45.37
Wed.	13	1 28 8.05	9.215	9 14 41.2	54.15	0 26.13	0.640	1 27 41.92
Thur.	14	1 31 49.37	9.228	9 36 16.2	53.76	0 10.90	0.627	1 31 38.47
Fri.	15	1 35 31.00	9.242	9 57 41.6	53.35	0 4.03	0.614	1 35 35.03
Sat.	16	1 39 12.98	9.257	10 18 57.1	52.93	0 18.60	0.599	1 39 31.58
Sun.	17	1 42 55.33	9.272	10 40 2.3	52.50	0 32.80	0.584	1 43 28.13
Mon.	18	1 46 38.05	9.288	11 0 56.9	52.05	0 46.64	0.568	1 47 24.69
Tues.	19	1 50 21.16	9.305	11 21 40.7	51.59	1 0.08	0.551	1 51 21.24
Wed.	20	1 54 4.68	9.323	11 42 13.4	51.12	1 13.11	0.533	1 55 17.79
Thur.	21	1 57 48.64	9.341	12 2 34.5	50.63	1 25.71	0.515	1 59 14.35
Fri.	22	2 1 33.04	9.360	12 22 43.7	50.13	1 37.86	0.496	2 3 10.90
Sat.	23	2 5 17.89	9.379	12 42 40.8	49.62	1 49.57	0.477	2 7 7.46
Sun.	24	2 9 3.22	9.399	13 2 25.4	49.09	2 0.79	0.457	2 11 4.01
Mon.	25	2 12 49.04	9.420	13 21 57.2	48.55	2 11.52	0.437	2 15 0.56
Tues.	26	2 16 35.35	9.441	13 41 15.9	48.00	2 21.77	0.416	2 18 57.12
Wed.	27	2 20 22.18	9.462	14 0 21.3	47.43	2 31.49	0.394	2 22 53.67
Thur.	28	2 24 9.55	9.484	14 19 13.1	46.86	2 40.68	0.372	2 26 50.23
Fri.	29	2 27 57.45	9.507	14 37 50.7	46.26	2 49.33	0.349	2 30 46.78
Sat.	30	2 31 45.85	9.530	14 56 13.9	45.66	2 57.44	0.326	2 34 43.33
Sun.	31	2 35 34.89	9.553	N.15 14 22.4	45.04	3 5.00	0.303	2 38 39.89

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE.		THE SUN'S Diff. for 1 hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	92	12 1 30.3	1 4.7	147.80	+0.41	0.0000656	53.2	23 15 47.41
2	93	13 0 36.8	0 11.1	147.73	0.42	.0001932	53.1	23 11 51.50
3	94	13 59 41.4	59 15.6	147.65	0.40	.0003204	52.9	23 7 55.60
4	95	14 58 44.3	58 18.4	147.58	0.36	.0004469	52.6	23 3 59.70
5	96	15 57 45.3	57 19.4	147.50	0.28	.0005728	52.3	23 0 3.79
6	97	16 56 44.3	56 18.3	147.42	0.19	.0006978	51.9	22 56 7.88
7	98	17 55 41.3	55 15.2	147.33	+0.07	.0008219	51.5	22 52 11.97
8	99	18 54 36.2	54 10.0	147.24	—0.06	.0009451	51.1	22 48 16.07
9	100	19 53 28.9	53 2.6	147.15	0.19	.0010673	50.7	22 44 20.17
10	101	20 52 19.5	51 53.1	147.06	0.33	.0011886	50.4	22 40 24.26
11	102	21 51 7.9	50 41.4	146.97	0.46	.0013091	50.1	22 36 28.35
12	103	22 49 54.1	49 27.5	146.88	0.57	.0014289	49.8	22 32 32.44
13	104	23 48 38.0	48 11.3	146.78	0.67	.0015481	49.5	22 28 36.53
14	105	24 47 19.7	46 52.9	146.69	0.74	.0016667	49.2	22 24 40.63
15	106	25 45 59.1	45 32.2	146.60	0.78	.0017847	49.0	22 20 44.72
16	107	26 44 36.3	44 9.3	146.51	0.79	.0019022	48.9	22 16 48.81
17	108	27 43 11.3	42 44.2	146.41	0.77	.0020194	48.8	22 12 52.90
18	109	28 41 44.1	41 16.9	146.32	0.72	.0021364	48.7	22 8 57.00
19	110	29 40 14.9	39 47.6	146.24	0.64	.0022532	48.6	22 5 1.10
20	111	30 38 43.7	38 16.3	146.16	0.55	.0023696	48.5	22 1 5.19
21	112	31 37 10.6	36 43.1	146.08	0.43	.0024858	48.4	21 57 9.28
22	113	32 35 35.6	35 8.0	146.00	0.30	.0026019	48.3	21 53 13.37
23	114	33 33 58.7	33 31.0	145.93	0.17	.0027178	48.2	21 49 17.46
24	115	34 32 20.1	31 52.3	145.86	—0.04	.0028335	48.1	21 45 21.56
25	116	35 30 39.8	30 11.9	145.79	+0.08	.0029488	47.9	21 41 25.65
26	117	36 28 57.9	28 29.9	145.72	0.18	.0030636	47.7	21 37 29.74
27	118	37 27 14.4	26 46.3	145.66	0.25	.0031778	47.4	21 33 33.83
28	119	38 25 29.5	25 1.3	145.60	0.30	.0032912	47.0	21 29 37.92
29	120	39 23 43.1	23 14.8	145.54	0.32	.0034036	46.6	21 25 42.02
30	121	40 21 55.3	21 26.8	145.48	0.31	.0035149	46.1	21 21 46.11
31	122	41 20 6.0	19 37.4	145.42	+0.27	0.0036250	45.5	21 17 50.20

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 16.0	16 19.6	59 35.3	+1.17	59 48.5	+1.01	20 19.7	2.28	24.3
2	16 22.7	16 25.1	60 0.0	0.85	60 9.0	0.64	21 13.9	2.24	25.3
3	16 26.8	16 27.7	60 15.4	+0.40	60 18.6	+0.13	22 7.4	2.22	26.3
4	16 27.7	16 26.8	60 18.5	−0.15	60 15.0	−0.44	23 0.6	2.22	27.3
5	16 24.9	16 22.0	60 7.9	0.74	59 57.3	1.02	23 54.0	2.23	28.3
6	16 18.2	16 13.5	59 43.3	1.29	59 26.3	1.53	δ		29.3
7	16 8.1	16 2.2	59 6.6	1.72	58 44.9	1.88	0 47.8	2.25	0.9
8	15 55.8	15 49.2	58 21.4	2.00	57 56.7	2.08	1 42.0	2.26	1.9
9	15 42.3	15 35.3	57 31.5	2.10	57 6.3	2.09	2 36.2	2.25	2.9
10	15 28.6	15 22.1	56 41.4	2.03	56 17.6	1.93	3 29.8	2.20	3.9
11	15 15.9	15 10.3	55 55.1	2.81	55 34.2	1.66	4 21.9	2.13	4.9
12	15 5.2	15 0.6	55 15.3	1.49	54 58.5	1.30	5 12.1	2.05	5.9
13	14 56.7	14 53.4	54 44.1	1.10	54 32.2	0.89	6 0.1	1.95	6.9
14	14 50.9	14 49.0	54 22.8	0.67	54 16.0	0.46	6 45.9	1.87	7.9
15	14 47.9	14 47.4	54 11.8	−0.24	54 10.1	−0.03	7 30.0	1.81	8.9
16	14 47.6	14 48.5	54 10.9	+0.17	54 14.1	+0.36	8 12.8	1.77	9.9
17	14 50.0	14 52.0	54 19.6	0.54	54 27.1	0.70	8 55.1	1.77	10.9
18	14 54.5	14 57.6	54 36.4	0.85	54 47.4	0.98	9 37.7	1.79	11.9
19	15 1.1	15 4.8	54 59.9	1.09	55 13.5	1.18	10 21.1	1.84	12.9
20	15 8.7	15 12.8	55 28.1	1.24	55 43.4	1.29	11 6.2	1.93	13.9
21	15 17.1	15 21.5	55 59.2	1.33	56 15.3	1.34	11 53.6	2.03	14.9
22	15 25.9	15 30.2	56 31.3	1.33	56 47.3	1.32	12 43.6	2.14	15.9
23	15 34.5	15 38.6	57 2.9	1.28	57 18.1	1.24	13 36.3	2.24	16.9
24	15 42.6	15 46.4	57 32.8	1.19	57 46.8	1.14	14 31.2	2.32	17.9
25	15 50.0	15 53.5	58 0.1	1.08	58 12.7	1.02	15 27.6	2.35	18.9
26	15 56.7	15 59.7	58 24.5	0.95	58 35.5	0.88	16 24.2	2.34	19.9
27	16 2.5	16 5.0	58 45.7	0.81	58 55.1	0.74	17 20.0	2.30	20.9
28	16 7.3	16 9.3	59 3.5	0.66	59 11.0	0.58	18 14.5	2.24	21.9
29	16 11.1	16 12.5	59 17.4	0.48	59 22.6	0.38	19 7.6	2.19	22.9
30	16 13.5	16 14.2	59 26.5	+0.26	59 28.9	+0.13	19 59.6	2.16	23.9
31	16 14.4	16 14.1	59 29.6	−0.01	59 28.6	−0.17	20 51.1	2.15	24.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 15 10.15	2.3912	S. 14 43 40.1	8.842
1	20 17 33.58	2.3896	14 34 46.7	8.940
2	20 19 56.91	2.3881	14 25 47.5	9.037
3	20 22 20.15	2.3866	14 16 42.4	9.133
4	20 24 43.29	2.3850	14 7 31.6	9.228
5	20 27 6.34	2.3834	13 58 15.1	9.322
6	20 29 29.29	2.3818	13 48 53.0	9.415
7	20 31 52.15	2.3801	13 39 25.4	9.506
8	20 34 14.92	2.3785	13 29 52.3	9.597
9	20 36 37.59	2.3769	13 20 13.7	9.687
10	20 39 0.16	2.3753	13 10 29.8	9.776
11	20 41 22.64	2.3737	13 0 40.7	9.864
12	20 43 45.02	2.3720	12 50 46.3	9.951
13	20 46 7.30	2.3703	12 40 46.9	10.036
14	20 48 29.48	2.3687	12 30 42.2	10.120
15	20 50 51.56	2.3671	12 20 32.4	10.203
16	20 53 13.55	2.3655	12 10 17.9	10.284
17	20 55 35.44	2.3639	11 59 58.5	10.364
18	20 57 57.23	2.3622	11 49 34.1	10.443
19	21 0 18.92	2.3606	11 39 5.1	10.522
20	21 2 40.52	2.3590	11 28 31.4	10.600
21	21 5 2.02	2.3574	11 17 53.0	10.677
22	21 7 23.43	2.3559	11 7 10.2	10.753
23	21 9 44.74	2.3543	S. 10 56 22.8	10.827

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 12 5.96	2.3527	S. 10 45 30.9	10.900
1	21 14 27.08	2.3512	10 34 34.9	10.972
2	21 16 48.11	2.3497	10 23 34.5	11.043
3	21 19 9.06	2.3482	10 12 29.8	11.113
4	21 21 29.91	2.3467	10 1 21.1	11.181
5	21 23 50.67	2.3453	9 50 8.3	11.247
6	21 26 11.35	2.3439	9 38 51.4	11.312
7	21 28 31.94	2.3425	9 27 30.9	11.376
8	21 30 52.44	2.3410	9 16 6.5	11.438
9	21 33 12.84	2.3395	9 4 38.3	11.499
10	21 35 33.16	2.3380	8 53 6.7	11.559
11	21 37 53.40	2.3366	8 41 31.4	11.618
12	21 40 13.56	2.3353	8 29 52.5	11.676
13	21 42 33.64	2.3340	8 18 10.3	11.733
14	21 44 53.64	2.3326	8 6 24.7	11.788
15	21 47 13.55	2.3313	7 54 35.7	11.842
16	21 49 33.39	2.3300	7 42 43.7	11.895
17	21 51 53.15	2.3287	7 30 48.5	11.946
18	21 54 12.83	2.3274	7 18 50.2	11.996
19	21 56 32.43	2.3261	7 6 49.0	12.044
20	21 58 51.96	2.3250	6 54 45.0	12.091
21	22 1 11.43	2.3239	6 42 38.2	12.137
22	22 3 30.84	2.3229	6 30 28.7	12.182
23	22 5 50.18	2.3218	6 18 16.5	12.224
24	22 8 9.46	2.3206	S. 6 6 1.7	12.265

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 8 9.46	2.3206	S. 6 6 1.7	12.265
1	22 10 28.66	2.3195	5 53 44.7	12.304
2	22 12 47.80	2.3184	5 41 25.3	12.343
3	22 15 6.88	2.3174	5 29 3.6	12.381
4	22 17 25.89	2.3164	5 16 39.8	12.417
5	22 19 44.85	2.3154	5 4 13.8	12.451
6	22 22 3.75	2.3145	4 51 45.7	12.484
7	22 24 22.59	2.3136	4 39 15.9	12.515
8	22 26 41.38	2.3128	4 26 44.2	12.545
9	22 29 0.13	2.3120	4 14 10.6	12.574
10	22 31 18.82	2.3112	4 1 35.4	12.602
11	22 33 37.47	2.3104	3 48 58.6	12.627
12	22 35 56.08	2.3097	3 36 20.1	12.650
13	22 38 14.64	2.3090	3 23 40.5	12.672
14	22 40 33.16	2.3083	3 10 59.6	12.693
15	22 42 51.64	2.3076	2 58 17.4	12.713
16	22 45 10.07	2.3069	2 45 34.1	12.733
17	22 47 28.47	2.3063	2 32 49.7	12.751
18	22 49 46.84	2.3057	2 20 4.2	12.767
19	22 52 5.17	2.3052	2 7 17.9	12.780
20	22 54 23.47	2.3047	1 54 30.8	12.792
21	22 56 41.74	2.3042	1 41 42.8	12.803
22	22 58 59.98	2.3038	1 28 54.4	12.814
23	23 1 18.20	2.3034	S. 1 16 5.4	12.821

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 3 36.40	2.3031	S. 1 3 15.9	12.827
1	23 5 54.58	2.3028	0 50 26.1	12.832
2	23 8 12.74	2.3025	0 37 36.1	12.835
3	23 10 30.87	2.3022	0 24 45.9	12.837
4	23 12 48.99	2.3019	S. 0 11 55.7	12.838
5	23 15 7.10	2.3016	N. 0 0 54.6	12.838
6	23 17 25.19	2.3014	0 13 45.0	12.836
7	23 19 43.27	2.3012	0 26 34.9	12.833
8	23 22 1.34	2.3011	0 39 24.7	12.828
9	23 24 19.41	2.3010	0 52 14.2	12.821
10	23 26 37.47	2.3010	1 5 3.2	12.813
11	23 28 55.52	2.3009	1 17 51.6	12.803
12	23 31 13.57	2.3009	1 30 39.5	12.791
13	23 33 31.63	2.3009	[illegible] 43 26.6	12.778
14	23 35 49.69	2.3010	1 56 12.8	12.763
15	23 38 7.76	2.3011	2 8 58.2	12.748
16	23 40 25.83	2.3012	2 21 42.5	[illegible]2.733
17	23 42 43.91	2.3013	2 34 25.8	12.715
18	23 45 1.99	2.3015	2 47 8.1	12.695
19	23 47 20.09	2.3017	2 59 49.1	12.673
20	23 49 38.20	2.3019	3 12 28.7	12.650
21	23 51 56.31	2.3021	3 25 7.0	12.626
22	23 54 14.44	2.3023	3 37 43.7	12.600
23	23 56 32.59	2.3026	3 50 18.8	12.572
24	23 58 50.75	2.3029	N. 4 2 52.5	12.543

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 58 50.75	2.3029	N. 4 2 52.5	12.548
1	0 1 8.94	2.3033	4 15 24.1	12.513
2	0 3 27.15	2.3036	4 27 53.9	12.481
3	0 5 45.38	2.3040	4 40 21.8	12.448
4	0 8 3.63	2.3044	4 52 47.6	12.414
5	0 10 21.91	2.3049	5 5 11.3	12.378
6	0 12 40.23	2.3054	5 17 33.0	12.341
7	0 14 58.57	2.3059	5 29 52.3	12.304
8	0 17 16.94	2.3064	5 42 9.3	12.265
9	0 19 35.34	2.3070	5 54 23.9	12.224
10	0 21 53.78	2.3076	6 6 35.9	12.181
11	0 24 12.25	2.3081	6 18 45.4	12.136
12	0 26 30.76	2.3086	6 30 52.3	12.090
13	0 28 49.29	2.3092	6 42 56.1	12.042
14	0 31 7.86	2.3098	6 54 57.1	11.994
15	0 33 26.48	2.3104	7 6 55.3	11.945
16	0 35 45.12	2.3110	7 18 50.4	11.894
17	0 38 3.80	2.3117	7 30 42.4	11.842
18	0 40 22.53	2.3124	7 42 31.5	11.789
19	0 42 41.30	2.3131	7 54 17.1	11.734
20	0 45 0.11	2.3138	8 5 59.4	11.677
21	0 47 18.95	2.3146	8 17 38.4	11.619
22	0 49 37.85	2.3153	8 29 13.8	11.561
23	0 51 56.79	2.3160	N. 8 40 45.6	11.501

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 54 15.77	2.3167	N. 8 52 13.9	11.440
1	0 56 34.79	2.3174	9 3 38.3	11.377
2	0 58 53.86	2.3182	9 14 58.9	11.313
3	1 1 12.99	2.3190	9 26 15.8	11.248
4	1 3 32.16	2.3198	9 37 28.6	11.181
5	1 5 51.37	2.3206	9 48 37.4	11.114
6	1 8 10.61	2.3213	9 59 42.2	11.046
7	1 10 29.91	2.3221	10 10 42.7	10.976
8	1 12 49.26	2.3228	10 21 39.1	10.905
9	1 15 8.66	2.3236	10 32 31.3	10.833
10	1 17 28.10	2.3244	10 43 18.9	10.759
11	1 19 47.59	2.3252	10 54 2.1	10.684
12	1 22 7.13	2.3260	11 4 41.0	10.609
13	1 24 26.71	2.3268	11 15 15.1	10.532
14	1 26 46.34	2.3275	11 25 44.6	10.453
15	1 29 6.02	2.3283	11 36 9.5	10.373
16	1 31 25.75	2.3291	11 46 29.4	10.293
17	1 33 45.52	2.3299	11 56 44.5	10.212
18	1 36 5.34	2.3307	12 6 54.8	10.130
19	1 38 25.21	2.3314	12 17 0.0	10.047
20	1 40 45.12	2.3321	12 27 0.2	9.962
21	1 43 5.06	2.3328	12 36 55.3	9.875
22	1 45 25.05	2.3335	12 46 45.3	9.788
23	1 47 45.08	2.3343	12 56 30.2	9.702
24	1 50 5.16	2.3350	N.13 6 9.9	9.615

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 50 5.16	2.3350	N.13 6 9.9	9.615
1	1 52 25.28	2.3357	13 15 44.1	9.526
2	1 54 45.44	2.3364	13 25 12.9	9.436
3	1 57 5.63	2.3371	13 34 36.4	9.345
4	1 59 25.87	2.3377	13 43 54.3	9.252
5	2 1 46.15	2.3383	13 53 6.6	9.159
6	2 4 6.46	2.3389	14 2 13.4	9.066
7	2 6 26.81	2.3394	14 11 14.5	8.972
8	2 8 47.19	2.3400	14 20 9.9	8.877
9	2 11 7.61	2.3406	14 28 59.6	8.781
10	2 13 28.06	2.3411	14 37 43.4	8.683
11	2 15 48.54	2.3415	14 46 21.4	8.584
12	2 18 9.05	2.3420	14 54 53.6	8.486
13	2 20 29.58	2.3424	15 3 19.7	8.387
14	2 22 50.13	2.3428	15 11 39.9	8.286
15	2 25 10.71	2.3432	15 19 54.2	8.185
16	2 27 31.31	2.3436	15 28 2.3	8.084
17	2 29 51.94	2.3440	15 36 4.3	7.982
18	2 32 12.59	2.3443	15 44 0.2	7.879
19	2 34 33.26	2.3446	15 51 49.8	7.776
20	2 36 53.94	2.3449	15 59 33.2	7.672
21	2 39 14.64	2.3451	16 7 10.5	7.567
22	2 41 35.36	2.3453	16 14 41.3	7.462
23	2 43 56.08	2.3454	N.16 22 5.8	7.356

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 46 16.79	2.3455	N.16 29 24.0	7.249
1	2 48 37.52	2.3455	16 36 35.7	7 141
2	2 50 58.25	2.3455	16 43 40.9	7.033
3	2 53 18.97	2.3455	16 50 39.7	6.925
4	2 55 39.70	2.3455	16 57 31.9	6.817
5	2 58 0.43	2.3454	17 4 17.6	6.707
6	3 0 21.15	2.3454	17 10 56.8	6.597
7	3 2 41.87	2.3453	17 17 29.3	6.487
8	3 5 2.58	2.3451	17 23 55.2	6.376
9	3 7 23.28	2.3448	17 30 14.4	6.265
10	3 9 43.96	2.3445	17 36 26.9	6.154
11	3 12 4.62	2.3441	17 42 32.8	6.042
12	3 14 25.27	2.3438	17 48 32.0	5.930
13	3 16 45.89	2.3434	17 54 24.4	5.817
14	3 19 6.48	2.3430	18 0 10.0	5.704
15	3 21 27.04	2.3425	18 5 48.8	5.590
16	3 23 47.57	2.3420	18 11 20.8	5.476
17	3 26 8.07	2.3414	18 16 46.0	5.362
18	3 28 28.54	2.3408	18 22 4.3	5.248
19	3 30 48.98	2.3402	18 27 15.8	5.134
20	3 33 9.36	2.3395	18 32 20.4	5.020
21	3 35 29.71	2.3388	18 37 18.1	4.906
22	3 37 50.01	2.3380	18 42 9.0	4.791
23	3 40 10.27	2.3372	18 46 53.0	4.676
24	3 42 30.48	2.3363	N.18 51 30.0	4.560

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 9.					MONDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 42 30.48	2.3363	N.18 51 30.0	4.560	0	5 32 43.53	2.2392	N.20 18 10.4	0.869
1	3 44 50.63	2.3353	18 56 0.1	4.444	1	5 34 57.79	2.2362	20 17 15.0	0.974
2	3 47 10.72	2.3343	19 0 23.3	4.328	2	5 37 11.87	2.2331	20 16 13.4	1.079
3	3 49 30.74	2.3333	19 4 39.5	4.212	3	5 39 25.76	2.2300	20 15 5.7	1.184
4	3 51 50.71	2.3322	19 8 48.7	4.096	4	5 41 39.47	2.2269	20 13 51.6	1.288
5	3 54 10.61	2.3311	19 12 51.0	3.980	5	5 43 52.99	2.2238	20 12 31.2	1.392
6	3 56 30.43	2.3300	19 16 46.4	3.864	6	5 46 6.33	2.2206	20 11 4.5	1.496
7	3 58 50.20	2.3288	19 20 34.8	3.748	7	5 48 19.47	2.2174	20 9 31.7	1.599
8	4 1 9.89	2.3275	19 24 16.2	3.633	8	5 50 32.42	2.2142	20 7 52.7	1.701
9	4 3 29.49	2.3261	19 27 50.7	3.518	9	5 52 45.19	2.2110	20 6 7.5	1.803
10	4 5 49.02	2.3247	19 31 18.2	3.402	10	5 54 57.76	2.2078	20 4 16.2	1.905
11	4 8 8.46	2.3233	19 34 38.8	3.286	11	5 57 10.13	2.2045	20 2 18.9	2.006
12	4 10 27.81	2.3218	19 37 52.6	3.170	12	5 59 22.28	2.2012	20 0 15.7	2.106
13	4 12 47.08	2.3203	19 40 59.4	3.054	13	6 1 34.23	2.1978	19 58 6.5	2.204
14	4 15 6.25	2.3187	19 43 59.2	2.938	14	6 3 45.99	2.1945	19 55 51.3	2.302
15	4 17 25.32	2.3171	19 46 51.9	2.822	15	6 5 57.55	2.1911	19 53 30.2	2.400
16	4 19 44.31	2.3155	19 49 37.7	2.705	16	6 8 8.91	2.1877	19 51 3.3	2.498
17	4 22 3.19	2.3138	19 52 16.6	2.589	17	6 10 20.07	2.1844	19 48 30.5	2.596
18	4 24 21.95	2.3121	19 54 48.5	2.474	18	6 12 31.03	2.1811	19 45 51.8	2.693
19	4 26 40.62	2.3103	19 57 13.5	2.359	19	6 14 41.79	2.1777	19 43 7.4	2.790
20	4 28 59.18	2.3084	19 59 31.6	2.244	20	6 16 52.35	2.1744	19 40 17.2	2.886
21	4 31 17.62	2.3065	20 1 42.8	2.129	21	6 19 2.71	2.1710	19 37 21.2	2.981
22	4 33 35.95	2.3045	20 3 47.1	2.014	22	6 21 12.87	2.1676	19 34 19.6	3.074
23	4 35 54.16	2.3025	N.20 5 44.5	1.899	23	6 23 22.82	2.1640	N.19 31 12.4	3.167
	SUNDAY 10.					TUESDAY 12.			
0	4 38 12.26	2.3005	N.20 7 35.1	1.785	0	6 25 32.55	2.1604	N.19 27 59.5	3.260
1	4 40 30.23	2.2984	20 9 18.8	1.671	1	6 27 42.08	2.1568	19 24 41.1	3.353
2	4 42 48.07	2.2963	20 10 55.7	1.557	2	6 29 51.39	2.1533	19 21 17.2	3.444
3	4 45 5.79	2.2942	20 12 25.7	1.443	3	6 32 0.49	2.1498	19 17 47.7	3.535
4	4 47 23.38	2.2920	20 13 48.9	1.330	4	6 34 9.37	2.1463	19 14 12.8	3.627
5	4 49 40.83	2.2897	20 15 5.3	1.217	5	6 36 18.04	2.1427	19 10 32.5	3.717
6	4 51 58.13	2.2874	20 16 15.0	1.104	6	6 38 26.49	2.1392	19 6 46.7	3.807
7	4 54 15.31	2.2851	20 17 17.9	0.992	7	6 40 34.73	2.1356	19 2 55.6	3.897
8	4 56 32.34	2.2827	20 18 14.0	0.879	8	6 42 42.76	2.1321	18 58 59.1	3.986
9	4 58 49.22	2.2802	20 19 3.3	0.767	9	6 44 50.57	2.1285	18 54 57.3	4.074
10	5 1 5.95	2.2777	20 19 46.1	0.655	10	6 46 58.17	2.1249	18 50 50.3	4.162
11	5 3 22.53	2.2752	20 20 22.1	0.543	11	6 49 5.56	2.1214	18 46 38.0	4.249
12	5 5 38.97	2.2726	20 20 51.2	0.432	12	6 51 12.73	2.1179	18 42 20.5	4.336
13	5 7 55.25	2.2700	20 21 13.8	0.321	13	6 53 19.70	2.1144	18 37 57.9	4.419
14	5 10 11.37	2.2674	20 21 29.8	0.211	14	6 55 26.46	2.1108	18 33 30.2	4.504
15	5 12 27.34	2.2647	20 21 39.2	0.101	15	6 57 33.00	2.1072	18 28 57.5	4.588
16	5 14 43.15	2.2620	20 21 41.9	0.008	16	6 59 39.32	2.1036	18 24 19.8	4.671
17	5 16 58.79	2.2593	20 21 38.2	0.117	17	7 1 45.43	2.1001	18 19 37.1	4.754
18	5 19 14.26	2.2566	20 21 28.0	0.226	18	7 3 51.34	2.0967	18 14 49.3	4.836
19	5 21 29.57	2.2538	20 21 11.2	0.335	19	7 5 57.04	2.0932	18 9 56.7	4.918
20	5 23 44.71	2.2510	20 20 47.9	0.443	20	7 8 2.52	2.0896	18 4 59.2	4.999
21	5 25 59.68	2.2481	20 20 18.1	0.550	21	7 10 7.78	2.0861	17 59 56.9	5.079
22	5 28 14.48	2.2452	20 19 41.9	0.657	22	7 12 12.84	2.0826	17 54 49.8	5.159
23	5 30 29.10	2.2422	20 18 59.3	0.763	23	7 14 17.69	2.0791	17 49 37.9	5.238
24	5 32 43.53	2.2392	N.20 18 10.4	0.869	24	7 16 22.33	2.0756	N.17 44 21.3	5.316

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 16 22.33	2.0756	N.17 44 21.3	5.316
1	7 18 26.77	2.0722	17 39 0.1	5.393
2	7 20 31.00	2.0688	17 33 34.2	5.470
3	7 22 35.02	2.0654	17 28 3.7	5.547
4	7 24 38.83	2.0620	17 22 28.6	5.624
5	7 26 42.44	2.0586	17 16 48.9	5.700
6	7 28 45.85	2.0551	17 11 4.6	5.775
7	7 30 49.05	2.0517	17 5 15.9	5.849
8	7 32 52.05	2.0483	16 59 22.8	5.923
9	7 34 54.86	2.0450	16 53 25.2	5.996
10	7 36 57.46	2.0417	16 47 23.3	6.069
11	7 38 59.86	2.0383	16 41 17.1	6.140
12	7 41 2.06	2.0350	16 35 6.5	6.211
13	7 43 4.05	2.0317	16 28 51.8	6.281
14	7 45 5.85	2.0284	16 22 32.9	6.350
15	7 47 7.47	2.0252	16 16 9.7	6.419
16	7 49 8.88	2.0220	16 9 42.5	6.488
17	7 51 10.10	2.0188	16 3 11.2	6.556
18	7 53 11.14	2.0156	15 56 35.9	6.623
19	7 55 11.98	2.0125	15 49 56.5	6.690
20	7 57 12.64	2.0094	15 43 13.1	6.757
21	7 59 13.11	2.0063	15 36 25.8	6.823
22	8 1 13.39	2.0032	15 29 34.5	6.889
23	8 3 13.49	2.0001	N.15 22 39.3	6.954

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 5 13.41	1.9971	N.15 15 40.1	7.018
1	8 7 13.14	1.9941	15 8 37.2	7.080
2	8 9 12.70	1.9911	15 1 30.5	7.142
3	8 11 12.08	1.9881	14 54 20.1	7.204
4	8 13 11.28	1.9852	14 47 6.1	7.265
5	8 15 10.31	1.9823	14 39 48.4	7.325
6	8 17 9.17	1.9795	14 32 27.0	7.385
7	8 19 7.85	1.9767	14 25 2.1	7.445
8	8 21 6.37	1.9739	14 17 33.6	7.504
9	8 23 4.72	1.9711	14 10 1.6	7.563
10	8 25 2.90	1.9683	14 2 26.1	7.621
11	8 27 0.92	1.9656	13 54 47.2	7.678
12	8 28 58.78	1.9630	13 47 4.8	7.735
13	8 30 56.48	1.9604	13 39 19.1	7.791
14	8 32 54.03	1.9578	13 31 30.0	7.846
15	8 34 51.42	1.9552	13 23 37.6	7.901
16	8 36 48.65	1.9526	13 15 41.9	7.955
17	8 38 45.73	1.9501	13 7 43.0	8.009
18	8 40 42.67	1.9476	12 59 40.9	8.063
19	8 42 39.45	1.9452	12 51 35.6	8.116
20	8 44 36.09	1.9428	12 43 27.1	8.168
21	8 46 32.60	1.9404	12 35 15.5	8.219
22	8 48 28.95	1.9380	12 27 0.9	8.270
23	8 50 25.17	1.9358	12 18 43.2	8.321
24	8 52 21.25	1.9336	N.12 10 22.5	8.371

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 52 21.25	1.9336	N.12 10 22.5	8.371
1	8 54 17.20	1.9314	12 1 58.9	8.419
2	8 56 13.02	1.9292	11 53 32.3	8.467
3	8 58 8.71	1.9270	11 45 2.7	8.515
4	9 0 4.27	1.9250	11 36 30.3	8.563
5	9 1 59.71	1.9230	11 27 55.1	8.610
6	9 3 55.04	1.9210	11 19 17.1	8.657
7	9 5 50.24	1.9190	11 10 36.3	8.703
8	9 7 45.33	1.9171	11 1 52.8	8.749
9	9 9 40.30	1.9152	10 53 6.5	8.794
10	9 11 35.16	1.9134	10 44 17.6	8.839
11	9 13 29.91	1.9116	10 35 26.0	8.883
12	9 15 24.56	1.9098	10 26 31.6	8.927
13	9 17 19.10	1.9081	10 17 34.8	8.970
14	9 19 13.54	1.9064	10 8 35.4	9.012
15	9 21 7.88	1.9048	9 59 33.3	9.053
16	9 23 2.12	1.9032	9 50 28.9	9.094
17	9 24 56.27	1.9017	9 41 22.1	9.133
18	9 26 50.33	1.9002	9 32 12.9	9.172
19	9 28 44.29	1.8987	9 23 1.5	9.210
20	9 30 38.17	1.8973	9 13 47.8	9.248
21	9 32 31.97	1.8959	9 4 31.7	9.286
22	9 34 25.67	1.8945	8 55 13.4	9.323
23	9 36 19.30	1.8933	N. 8 45 52.9	9.360

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 38 12.87	1.8921	N. 8 36 30.2	9.397
1	9 40 6.36	1.8909	8 27 5.3	9 434
2	9 41 59.78	1.8897	8 17 38.2	9.470
3	9 43 53.13	1.8886	8 8 8.9	9.505
4	9 45 46.41	1.8875	7 58 37.6	9.540
5	9 47 39.63	1.8864	7 49 4.2	9.574
6	9 49 32.79	1.8854	7 39 28.7	9.607
7	9 51 25.88	1.8844	7 29 51.3	9.640
8	9 53 18.92	1.8835	7 20 12.0	9.672
9	9 55 11.91	1.8827	7 10 30.7	9.704
10	9 57 4.84	1.8819	7 0 47.6	9.735
11	9 58 57.73	1.8812	6 51 2.6	9.765
12	10 0 50.59	1.8805	6 41 15.7	9.795
13	10 2 43.40	1.8798	6 31 27.2	9.824
14	10 4 36.17	1.8792	6 21 36.9	9.852
15	10 6 28.91	1.8786	6 11 44.8	9.880
16	10 8 21.61	1.8781	6 1 51.1	9.908
17	10 10 14.28	1.8776	5 51 55.8	9.935
18	10 12 6.93	1.8772	5 41 58.9	9.962
19	10 13 59.54	1.8768	5 32 0.4	9.988
20	10 15 52.15	1.8764	5 22 0.4	10.013
21	10 17 44.72	1.8761	5 11 58.8	10.038
22	10 19 37.27	1.8758	5 1 55.8	10.062
23	10 21 29.81	1.8756	4 51 51.3	10.086
24	10 23 22.35	1.8754	N. 4 41 45.4	10.109

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 23 22.35	1.8754	N. 4 41 45.4	10.109
1	10 25 14.87	1.8753	4 31 38.2	10.131
2	10 27 7.39	1.8753	4 21 29.7	10[illegible]53
3	10 28 59.91	1.8754	4 11 19.8	10.175
4	10 30 52.43	1.8754	4 1 8.7	10.196
5	10 32 44.96	1.8755	3 50 56.4	10.216
6	10 34 37.49	1.8756	3 40 42.7	10.236
7	10 36 30.02	1.8757	3 30 28.0	10.255
8	10 38 22.57	1.8759	3 20 12.1	10.274
9	10 40 15.15	1.8762	3 9 55.1	10.292
10	10 42 7.73	1.8766	2 59 37.0	10.310
11	10 44 0.34	1.8770	2 49 17.9	10.327
12	10 45 52.98	1.8774	2 38 57.8	10.343
13	10 47 45.64	1.8779	2 28 36.8	10.359
14	10 49 38.33	1.8784	2 18 14.8	10.374
15	10 51 31.06	1.8790	2 7 51.9	10.388
16	10 53 23.81	1.8796	1 57 28.2	10.402
17	10 55 16.61	1.8803	1 47 3.7	10.415
18	10 57 9.45	1.8810	1 36 38.5	10.427
19	10 59 2.33	1.8817	1 26 12.6	10.439
20	11 0 55.26	1.8825	1 15 46.0	10.450
21	11 2 48.24	1.8834	1 5 18.6	10.461
22	11 4 41.26	1.8843	0 54 50.7	10.471
23	11 6 34.35	1.8853	N. 0 44 22.2	10.480

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 8 27.50	1.8863	N. 0 33 53.1	10.489
1	11 10 20.70	1.8873	0 23 23.5	10.497
2	11 12 13.97	1.8884	0 12 53.5	10.504
3	11 14 7.32	1.8895	N. 0 2 23.0	10.511
4	11 16 0.72	1.8907	S. 0 8 7.8	10.517
5	11 17 54.20	1.8920	0 18 39.0	10.523
6	11 19 47.77	1.8933	0 29 10.6	10.528
7	11 21 41.40	1.8946	0 39 42.4	10.533
8	11 23 35.12	1.8960	0 50 14.5	10.537
9	11 25 28.92	1.8974	1 0 46.8	10.540
10	11 27 22.80	1.8988	1 11 19.2	10.543
11	11 29 16.78	1.9003	1 21 51.8	10.545
12	11 31 10.85	1.9019	1 32 24.5	10.545
13	11 33 5.02	1.9036	1 42 57.2	10.544
14	11 34 59.29	1.9053	1 53 29.8	10.544
15	11 36 53.66	1.9070	2 4 2.4	10.543
16	11 38 48.13	1.9088	2 14 34.9	10.542
17	11 40 42.71	1.9106	2 25 7.3	10.539
18	11 42 37.41	1.9124	2 35 39.6	10.536
19	11 44 32.21	1.9143	2 46 11.6	10.532
20	11 46 27.13	1.9163	2 56 43.4	10.528
21	11 48 22.17	1.9183	3 7 14.9	10.523
22	11 50 17.32	1.9203	3 17 46.0	10.517
23	11 52 12.60	1.9224	3 28 16.8	10.510
24	11 54 8.02	1.9245	S. 3 38 47.3	10.502

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 54 8.02	1.9245	S. 3 38 47.3	10.502
1	11 56 3.55	1.9267	3 49 17.1	10.494
2	11 57 59.23	1.9290	3 59 46.4	10.486
3	11 59 55.04	1.9313	4 10 15.3	10.475
4	12 1 50.98	1.9336	4 20 43.4	10.465
5	12 3 47.07	1.9360	4 31 10.9	10.454
6	12 5 43.30	1.9384	4 41 37.9	10.442
7	12 7 39.67	1.9409	4 52 4.0	10.429
8	12 9 36.20	1.9434	5 2 29.3	10.416
9	12 11 32.88	1.9459	5 12 53.9	10.402
10	12 13 29.70	1.9484	5 23 17.5	10.387
11	12 15 26.68	1.9510	5 33 40.2	10.371
12	12 17 23.83	1.9537	5 44 2.1	10.354
13	12 19 21.13	1.9565	5 54 22.9	10.337
14	12 21 18.60	1.9592	6 4 42.5	10.319
15	12 23 16.25	1.9619	6 15 1.1	10.300
16	12 25 14.05	1.9647	6 25 18.5	10.280
17	12 27 12.03	1.9676	6 35 34.7	10.260
18	12 29 10.19	1.9706	6 45 49.6	10.239
19	12 31 8.52	1.9737	6 56 3.2	10.217
20	12 33 7.03	1.9767	7 6 15.5	10.194
21	12 35 5.73	1.9797	7 16 26.4	10.170
22	13 37 4.60	1.9828	7 26 35.7	10.144
23	12 39 3.67	1.9860	S. 7 36 43.6	10.118

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 41 2.93	1.9892	S. 7 46 50.0	10.092
1	12 43 2.37	1.9924	7 56 54.6	10.065
2	12 45 2.01	1.9956	8 6 57.6	10.037
3	12 47 1.86	1.9989	8 16 59.0	10.008
4	12 49 1.90	2.0022	8 26 58.5	9.978
5	12 51 2.14	2.0056	8 36 56.2	9.947
6	12 53 2.57	2.0090	8 46 52.2	9.916
7	12 55 3.21	2.0124	8 56 46.2	9.884
8	12 57 4.06	2.0159	9 6 38.2	9.851
9	12 59 5.12	2.0194	9 16 28.3	9.817
10	13 1 6.38	2.0229	9 26 16.2	9.783
11	13 3 7.86	2.0265	9 36 2.1	9.747
12	13 5 9.57	2.0301	9 45 45.9	9.710
13	13 7 11.49	2.0338	9 55 27.3	9.673
14	13 9 13.63	2.0375	10 5 6.4	9.633
15	13 11 15.99	2.0412	10 14 43.2	9.593
16	13 13 18.57	2.0449	10 24 17.5	9.552
17	13 15 21.38	2.0486	10 33 49.4	9.511
18	13 17 24.41	2.0524	10 43 18.8	9.469
19	13 19 27.67	2.0562	10 52 45.6	9.425
20	13 21 31.16	2.0600	11 2 9.8	9.381
21	13 23 34.88	2.0639	11 11 31.3	9.336
22	13 25 38.83	2.0678	11 20 50.0	9.290
23	13 27 43.02	2.0718	11 30 6.0	9.243
24	13 29 47.45	2.0758	S. 11 39 19.2	9.195

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 29 47.45	2.0758	S. 11 39 19.2	9.196
1	13 31 52.12	2.0798	11 48 29.3	9.145
2	13 33 57.03	2.0838	11 57 36.5	9.094
3	13 36 2.18	2.0878	12 6 40.7	9.043
4	13 38 7.57	2.0919	12 15 41.7	8.992
5	13 40 13.21	2.0960	12 24 39.6	8.940
6	13 42 19.09	2.1001	12 33 34.5	8.887
7	13 44 25.22	2.1042	12 42 26.0	8.832
8	13 46 31.60	2.1083	12 51 14.2	8.776
9	13 48 38.22	2.1125	12 59 59.2	8.719
10	13 50 45.10	2.1167	13 8 40.6	8.662
11	13 52 52.23	2.1209	13 17 18.5	8.603
12	13 54 59.60	2.1251	13 25 53.0	8.543
13	13 57 7.23	2.1293	13 34 23.7	8.482
14	13 59 15.12	2.1336	13 42 50.7	8.421
15	14 1 23.26	2.1379	13 51 14.1	8.359
16	14 3 31.66	2.1422	13 59 33.6	8.295
17	14 5 40.32	2.1464	14 7 49.3	8.231
18	14 7 49.24	2.1507	14 16 1.1	8.166
19	14 9 58.41	2.1550	14 24 8.9	8.100
20	14 12 7.84	2.1594	14 32 12.9	8.032
21	14 14 17.53	2.1637	14 40 13.0	7.963
22	14 16 27.48	2.1680	14 48 8.8	7.893
23	14 18 37.69	2.1724	S. 14 56 0.2	7.822

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 20 48.16	2.1767	S. 15 3 47.5	7.750
1	14 22 58.89	2.1810	15 11 30.3	7.678
2	14 25 9.88	2.1853	15 19 8.7	7.603
3	14 27 21.13	2.1896	16 26 42.8	7.528
4	14 29 32.64	2.1938	15 34 12.2	7.452
5	14 31 44.41	2.1981	15 41 37.0	7.377
6	14 33 56.43	2.2024	15 48 57.3	7.300
7	14 36 8.71	2.2068	15 56 12.9	7.223
8	14 38 21.25	2.2111	16 3 23.9	7.145
9	14 40 34.05	2.2155	16 10 30.3	7.066
10	14 42 47.11	2.2198	16 17 31.8	6.986
11	14 45 0.43	2.2241	16 24 28.5	6.904
12	14 47 14.00	2.2284	16 31 20.3	6.820
13	14 49 27.83	2.2326	16 38 7.0	6.734
14	14 51 41.91	2.2369	16 44 48.5	6.648
15	14 53 56.25	2.2411	16 51 24.8	6.561
16	14 56 10.84	2.2453	16 57 55.8	6.474
17	14 58 25.68	2.2495	17 4 21.6	6.386
18	15 0 40.78	2.2537	17 10 42.3	6.298
19	15 2 56.13	2.2579	17 16 57.5	6.209
20	15 5 11.73	2.2621	17 23 7.3	6.118
21	15 7 27.57	2.2662	17 29 11.6	6.026
22	15 9 43.67	2.2703	17 35 10.4	5.934
23	15 12 0.01	2.2744	17 41 3.6	5.842
24	15 14 16.59	2.2784	S. 17 46 51.3	5.749

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 14 16.59	2.2784	S. 17 46 51.3	5.749
1	15 16 33.42	2.2824	17 52 33.3	5.654
2	15 18 50.49	2.2864	17 58 9.6	5.557
3	15 21 7.79	2.2904	18 3 40.1	5.459
4	15 23 25.34	2.2944	18 9 4.7	5.360
5	15 25 43.12	2.2983	18 14 23.3	5.261
6	15 28 1.14	2.3022	18 19 36.0	5.161
7	15 30 19.39	2.3061	18 24 42.6	5.061
8	15 32 37.87	2.3100	18 29 43.2	4.959
9	15 34 56.58	2.3138	18 34 37.7	4.856
10	15 37 15.52	2.3176	18 39 25.8	4.751
11	15 39 34.68	2.3213	18 44 7.7	4.646
12	15 41 54.07	2.3249	18 48 43.4	4.541
13	15 44 13.68	2.3285	18 53 12.7	4.436
14	15 46 33.50	2.3321	18 57 35.7	4.331
15	15 48 53.52	2.3356	19 1 52.3	4.225
16	15 51 13.77	2.3391	19 6 2.5	4.118
17	15 53 34.22	2.3426	19 10 6.3	4.010
18	15 55 54.87	2.3460	19 14 3.7	3.901
19	15 58 15.73	2.3494	19 17 54.4	3.791
20	16 0 36.79	2.3527	19 21 38.5	3.680
21	16 2 58.05	2.3560	19 25 16.0	3.568
22	16 5 19.52	2.3593	19 28 46.8	3.456
23	16 7 41.17	2.3624	S. 19 32 10.8	3.344

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 10 3.00	2.3654	S. 19 35 28.0	3.231
1	16 12 25.02	2.3684	19 38 38.4	3.117
2	16 14 47.21	2.3714	19 41 42.0	3.002
3	16 17 9.57	2.3743	19 44 38.7	2.886
4	16 19 32.12	2.3772	19 47 28.5	2.770
5	16 21 54.83	2.3800	19 50 11.5	2.654
6	16 24 17.71	2.3827	19 52 47.5	2.537
7	16 26 40.76	2.3854	19 55 16.4	2.418
8	16 29 3.96	2.3880	19 57 37.9	2.299
9	16 31 27.31	2.3906	19 59 52.4	2.180
10	16 33 50.82	2.3930	20 1 59.6	2.060
11	16 36 14.47	2.3954	20 3 59.3	1.941
12	16 38 38.26	2.3978	20 5 51.8	1.821
13	16 41 2.20	2.4001	20 7 37.1	1.701
14	16 43 26.27	2.4023	20 9 15.5	1.580
15	16 45 50.47	2.4045	20 10 46.7	1.458
16	16 48 14.81	2.4066	20 12 10.6	1.336
17	16 50 39.27	2.4086	20 13 27.1	1.213
18	16 53 3.84	2.4106	20 14 36.2	1.090
19	16 55 28.54	2.4125	20 15 37.9	0.968
20	16 57 53.34	2.4143	20 16 32.3	0.845
21	17 0 18.25	2.4161	20 17 19.3	0.722
22	17 2 43.28	2.4178	20 17 58.8	0.598
23	17 5 8.39	2.4194	20 18 30.9	0.474
24	17 7 33.59	2.4209	S. 20 18 55.7	0.348

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 25.					WEDNESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 7 33.59	2.4209	S. 20 18 55.7	0.348	0	19 4 11.26	2.4134	S. 18 11 23.8	5.586
1	17 9 58.88	2.4223	20 19 12.9	0.221	1	19 6 36.02	2.4118	18 5 45.3	5.700
2	17 12 24.25	2.4236	20 19 22.5	0.095	2	19 9 0.68	2.4102	17 59 59.9	5.814
3	17 14 49.70	2.4250	20 19 24.6	0.030	3	19 11 25.24	2.4085	17 54 7.5	5.928
4	17 17 15.23	2.4263	20 19 19.2	0.156	4	19 13 49.70	2.4068	17 48 8.4	6.042
5	17 19 40.84	2.4275	20 19 6.2	0.281	5	19 16 14.05	2.4050	17 42 2.5	6.155
6	17 22 6.53	2.4286	20 18 45.7	0.406	6	19 18 38.30	2.4032	17 35 49.9	6.267
7	17 24 32.28	2.4296	20 18 17.6	0.531	7	19 21 2.44	2.4014	17 29 30.6	6.377
8	17 26 58.08	2.4306	20 17 42.0	0.657	8	19 23 26.47	2.3995	17 23 4.7	6.487
9	17 29 23.94	2.4316	20 16 58.8	0.783	9	19 25 50.38	2.3976	17 16 32.1	6.597
10	17 31 49.87	2.4325	20 16 8.0	0.909	10	19 28 14.18	2.3957	17 9 53.0	6.707
11	17 34 15.84	2.4332	20 15 9.6	1.036	11	19 30 37.86	2.3937	17 3 7.4	6.815
12	17 36 41.85	2.4338	20 14 3.7	1.163	12	19 33 1.42	2.3917	16 56 15.2	6.921
13	17 39 7.89	2.4343	20 12 50.1	1.290	13	19 35 24.87	2.3897	16 49 16.8	7.027
14	17 41 33.96	2.4348	20 11 28.9	1.417	14	19 37 48.19	2.3876	16 42 12.0	7.132
15	17 44 0.06	2.4353	20 10 0.2	1.543	15	19 40 11.38	2.3855	16 35 0.9	7.236
16	17 46 26.20	2.4357	20 8 23.9	1.669	16	19 42 34.45	2.3834	16 27 43.5	7.343
17	17 48 52.35	2.4360	20 6 40.0	1.795	17	19 44 57.39	2.3813	16 20 19.8	7.446
18	17 51 18.51	2.4362	20 4 48.4	1.921	18	19 47 20.20	2.3791	16 12 49.9	7.549
19	17 53 44.69	2.4364	20 2 49.4	2.047	19	19 49 42.88	2.3769	16 5 13.8	7.652
20	17 56 10.87	2.4365	20 0 42.8	2.173	20	19 52 5.43	2.3747	15 57 31.7	7.753
21	17 58 37.06	2.4366	19 58 28.6	2.299	21	19 54 27.84	2.3725	15 49 43.6	7.853
22	18 1 3.26	2.4366	19 56 6.9	2.424	22	19 56 50.12	2.3702	15 41 49.5	7.953
23	18 3 29.44	2.4364	S. 19 53 37.7	2.550	23	19 59 12.27	2.3679	S. 15 33 49.4	8.051
	TUESDAY 26.					THURSDAY 28.			
0	18 5 55.61	2.4362	S. 19 51 1.0	2.675	0	20 1 34.28	2.3656	S. 15 25 43.4	8.148
1	18 8 21.77	2.4359	19 48 16.8	2.800	1	20 3 56.16	2.3635	15 17 31.7	8.244
2	18 10 47.91	2.4356	19 45 25.0	2.925	2	20 6 17.91	2.3613	15 9 14.3	8.339
3	18 13 14.03	2.4352	19 42 25.7	3.050	3	20 8 39.50	2.3590	15 0 51.1	8.433
4	18 15 40.13	2.4348	19 39 18.9	3.176	4	20 11 0.97	2.3567	14 52 22.4	8.526
5	18 18 6.20	2.4342	19 36 4.6	3.301	5	20 13 22.30	2.3544	14 43 48.1	8.619
6	18 20 32.23	2.4336	19 32 42.8	3.425	6	20 15 43.50	2.3521	14 35 8.2	8.711
7	18 22 58.23	2.4329	19 29 13.6	3.549	7	20 18 4.55	2.3497	14 26 22.9	8.801
8	18 25 24.18	2.4322	19 25 37.0	3.672	8	20 20 25.46	2.3474	14 17 32.2	8.891
9	18 27 50.09	2.4315	19 21 53.0	3.795	9	20 22 46.24	2.3450	14 8 36.0	8.980
10	18 30 15.97	2.4308	19 18 1.7	3.917	10	20 25 6.87	2.3426	13 59 34.6	9.068
11	18 32 41.79	2.4299	19 14 3.0	4.039	11	20 27 27.36	2.3403	13 50 27.9	9.154
12	18 35 7.55	2.4290	19 9 57.0	4.161	12	20 29 47.71	2.3380	13 41 16.0	9.239
13	18 37 33.27	2.4280	19 5 43.8	4.282	13	20 32 7.92	2.3357	13 31 59.2	9.323
14	18 39 58.92	2.4269	19 1 23.3	4.403	14	20 34 28.00	2.3334	13 22 37.3	9.407
15	18 42 24.49	2.4258	18 56 55.4	4.524	15	20 36 47.94	2.3311	13 13 10.4	9.490
16	18 44 50.01	2.4246	18 52 20.4	4.644	16	20 39 7.74	2.3289	13 3 38.6	9.572
17	18 47 15.45	2.4234	18 47 38.2	4.763	17	20 41 27.41	2.3266	12 54 1.9	9.652
18	18 49 40.81	2.4221	18 42 48.8	4.882	18	20 43 46.94	2.3243	12 44 20.4	9.731
19	18 52 6.11	2.4208	18 37 52.3	5.001	19	20 46 6.33	2.3220	12 34 34.2	9.810
20	18 54 31.32	2.4194	18 32 48.7	5.119	20	20 48 25.58	2.3197	12 24 43.3	9.888
21	18 56 56.43	2.4179	18 27 38.0	5.237	21	20 50 44.70	2.3174	12 14 47.7	9.964
22	18 59 21.46	2.4164	18 22 20.3	5.355	22	20 53 3.68	2.3152	12 4 47.6	10.040
23	19 1 46.40	2.4149	18 16 55.6	5.471	23	20 55 22.53	2.3130	11 54 43.0	10.115
24	19 4 11.26	2.4134	S. 18 11 23.8	5.586	24	20 57 41.25	2.3108	S. 11 44 33.8	10.189

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 29.					**SATURDAY 30.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 57 41.25	2.3106	S. 11 44 33.8	10.189	0	21 52 34.15	2.2652	S. 7 21 47.6	11.599
1	20 59 59.83	2.3087	11 34 20.4	10.262	1	21 54 50.01	2.2637	7 10 10.4	11 643
2	21 2 18.29	2.3065	11 24 2.6	10.333	2	21 57 5.79	2.2622	6 58 30.6	11.686
3	21 4 36.62	2.3044	11 13 40.4	10.402	3	21 59 21.48	2.2607	6 46 48.1	11.729
4	21 6 54.82	2.3023	11 3 14.3	10.470	4	22 1 37.07	2.2592	6 35 3.3	11.770
5	21 9 12.90	2.3002	10 52 44.1	10.537	5	22 3 52.58	2.2578	6 23 16.0	11.809
6	21 11 30.85	2.2981	10 42 9.9	10.603	6	22 6 8.02	2.2565	6 11 26.1	11.847
7	21 13 48.67	2.2960	10 31 31.9	10.667	7	22 8 23.37	2.2552	5 59 34.2	11.884
8	21 16 6.37	2.2939	10 20 50.0	10.730	8	22 10 38.65	2.2539	5 47 40.1	11.920
9	21 18 23.95	2.2919	10 10 4.3	10.792	9	22 12 53.85	2.2527	5 35 43.9	11.956
10	21 20 41.40	2.2899	9 59 15.0	10.853	10	22 15 8.97	2.2515	5 23 45.7	11.990
11	21 22 58.74	2.2879	9 48 22.0	10.914	11	22 17 24.03	2.2504	5 11 45.4	12.022
12	21 25 15.96	2.2859	9 37 25.3	10.974	12	22 19 39.03	2.2493	4 59 43.1	12.053
13	21 27 33.06	2.2840	9 26 25.1	11.033	13	22 21 53.96	2.2483	4 47 39.2	12.080
14	21 29 50.05	2.2822	9 15 21.4	11.091	14	22 24 8.83	2.2472	4 35 33.6	12.108
15	21 32 6.94	2.2804	9 4 14.1	11.148	15	22 26 23.63	2.2462	4 23 26.3	12.136
16	21 34 23.71	2.2786	8 53 3.6	11.204	16	22 28 38.37	2.2452	4 11 17.4	12.161
17	21 36 40.37	2.2768	8 41 49.8	11.260	17	22 30 53.06	2.2443	3 59 7.0	12.186
18	21 38 56.93	2.2751	8 30 32.7	11.311	18	22 33 7.69	2.2434	3 46 55.0	12.209
19	21 41 13.38	2.2734	8 19 12.5	11.361	19	22 35 22.27	2.2426	3 34 41.8	12.232
20	21 43 29.73	2.2717	8 7 49.4	11.411	20	22 37 36.80	2.2418	3 22 27.3	12.253
21	21 45 45.99	2.2700	7 56 23.3	11.460	21	22 39 51.29	2.2410	3 10 11.5	12.273
22	21 48 2.15	2.2683	7 44 54.2	11.509	22	22 42 5.73	2.2403	2 57 54.6	12.291
23	21 50 18.20	2.2667	7 33 22.3	11.555	23	22 44 20.13	2.2397	2 45 36.7	12.308
24	21 52 34.15	2.2652	S. 7 21 47.6	11.599	24	22 46 34.50	2.2391	S. 2 33 17.7	12.324

PHASES OF THE MOON.

	d	h	m
● New Moon, ...	6	1	49.0
☽ First Quarter, ...	13	12	8.6
○ Full Moon, ...	21	13	18.7
☾ Last Quarter, ...	28	16	34.5

	d	h
☾ Perigee, ...	3	17.6
☾ Apogee, ...	15	14.0
☾ Perigee, ...	30	23.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Jupiter	W.	65° 38′ 33″	2220	67° 26′ 30″	2212	69° 14′ 40″	2203	71° 3′ 3″	2194
	Antares	W.	55 33 51	2274	57 20 28	2264	59 7 20	2255	60 54 26	2245
	Venus	E.	41 33 23	2682	39 56 19	2676	38 19 7	2672	36 41 49	2667
	Sun	E.	69 25 15	2554	67 45 17	2545	66 5 6	2535	64 24 42	2526
2	Jupiter	W.	80 8 4	2155	81 57 39	2149	83 47 24	2143	85 37 18	2136
	Antares	W.	69 53 20	2202	71 41 44	2194	73 30 20	2188	75 19 6	2182
	Sun	E.	55 59 39	2486	54 18 6	2479	52 36 23	2472	50 54 31	2466
3	Jupiter	W.	94 48 59	2112	96 39 40	2109	98 30 26	2105	100 21 17	2103
	Antares	W.	84 25 6	2157	86 14 39	2153	88 4 17	2150	89 54 0	2147
	α Aquilæ	W.	38 45 3	3324	40 8 47	3231	41 34 19	3151	43 1 27	3080
	Sun	E.	42 23 14	2443	40 40 41	2441	38 58 4	2438	37 15 24	2436
8	Sun	W.	25 15 32	2756	26 50 57	2770	28 26 4	2786	30 0 50	2801
	Pollux	E.	67 17 54	2512	65 36 58	2531	63 56 28	2550	62 16 24	2570
	Regulus	E.	103 47 6	2431	102 4 16	2448	100 21 49	2464	98 39 45	2481
9	Sun	W.	37 49 25	2885	39 22 3	2903	40 54 18	2920	42 26 11	2938
	Pollux	E.	54 3 8	2677	52 25 57	2701	50 49 18	2724	49 13 10	2749
	Regulus	E.	90 15 16	2564	88 35 32	2580	86 56 10	2598	85 17 12	2615
10	Sun	W.	50 0 2	3026	51 29 42	3043	52 59 1	3060	54 27 59	3078
	Pollux	E.	41 20 56	2885	39 48 18	2916	38 16 19	2949	36 45 2	2984
	Regulus	E.	77 8 8	2700	75 31 28	2716	73 55 10	2734	72 19 15	2750
11	Sun	W.	61 47 37	3161	63 14 33	3176	64 41 11	3192	66 7 30	3207
	Aldebaran	W.	15 51 22	2920	17 23 16	2916	18 55 14	2916	20 27 12	2919
	Pollux	E.	29 20 30	3204	27 54 25	3262	26 29 29	3327	25 5 49	3402
	Regulus	E.	64 25 1	2830	62 51 12	2846	61 17 44	2861	59 44 35	2876
	Saturn	E.	110 41 6	2802	109 6 41	2816	107 32 34	2831	105 58 46	2844
12	Sun	W.	73 14 45	3276	74 39 24	3289	76 3 48	3302	77 27 57	3314
	Aldebaran	W.	28 5 31	2953	29 36 43	2962	31 7 44	2969	32 38 35	2978
	Regulus	E.	52 3 31	2947	50 32 12	2961	49 1 10	2974	47 30 25	2987
	Saturn	E.	98 13 59	2908	96 41 50	2920	95 9 56	2931	93 38 16	2942
	Spica	E.	105 44 1	2913	104 11 59	2925	102 40 12	2936	101 8 39	2947
13	Sun	W.	84 25 25	3366	85 48 20	3376	87 11 4	3385	88 33 38	3393
	Aldebaran	W.	40 10 14	3018	41 40 5	3026	43 9 46	3032	44 39 19	3039
	Regulus	E.	40 0 37	3049	38 31 25	3061	37 2 28	3073	35 33 46	3085
	Saturn	E.	86 3 18	2991	84 32 54	2999	83 2 40	3007	81 32 36	3015
	Spica	E.	93 34 13	2997	92 3 56	3005	90 33 49	3013	89 3 52	3020
14	Sun	W.	95 24 24	3425	96 46 12	3431	98 7 54	3435	99 29 31	3438
	Aldebaran	W.	52 5 13	3065	53 34 5	3069	55 2 52	3073	56 31 34	3077
	Regulus	E.	28 14 1	3151	26 46 53	3167	25 20 4	3184	23 53 36	3200
	Saturn	E.	74 4 30	3047	72 35 15	3052	71 6 7	3056	69 37 4	3061
	Spica	E.	81 36 15	3051	80 7 5	3056	78 38 1	3060	77 9 2	3064
15	Sun	W.	106 16 41	3451	107 38 0	3452	108 59 18	3452	110 20 36	3452
	Aldebaran	W.	63 54 18	3086	65 22 45	3087	66 51 11	3087	68 19 37	3087
	Pollux	W.	23 53 12	3624	25 11 20	3567	26 30 30	3519	27 50 33	3479
	Saturn	E.	62 12 59	3076	60 44 20	3077	59 15 42	3078	57 47 6	3079
	Spica	E.	69 45 4	3075	68 16 24	3075	66 47 44	3076	65 19 5	3076

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Jupiter	W.	72° 51′ 39″	2186	74° 40′ 27″	2178	76° 29′ 28″	2170	78° 18′ 40″	2163
	Antares	W.	62 41 46	2236	64 29 20	2227	66 17 8	2218	68 5 8	2210
	Venus	E.	35 4 25	2663	33 26 56	2661	31 49 24	2661	30 11 52	2663
	Sun	E.	62 44 5	2517	61 3 15	2509	59 22 14	2501	57 41 2	2493
2	Jupiter	W.	87 27 22	2130	89 17 35	2125	91 7 56	2120	92 58 24	2116
	Antares	W.	77 8 1	2176	78 57 5	2170	80 46 18	2165	82 35 39	2161
	Sun	E.	49 12 30	2460	47 30 21	2455	45 48 5	2450	44 5 42	2447
3	Jupiter	W.	102 12 11	2101	104 3 8	2099	105 54 8	2099	107 45 9	2098
	Antares	W.	91 43 47	2146	93 33 36	2145	95 23 27	2144	97 13 19	2143
	a Aquilæ	W.	44 30 1	3017	45 59 53	2961	47 30 55	2912	49 2 59	2868
	Sun	E.	35 32 41	2436	33 49 57	2436	32 7 13	2436	30 24 30	2438
8	Sun	W.	31 35 16	2818	33 9 21	2835	34 43 4	2852	36 16 25	2868
	Pollux	E.	60 36 48	2591	58 57 40	2611	57 19 0	2632	55 40 49	2655
	Regulus	E.	96 58 5	2497	95 16 48	2514	93 35 54	2531	91 55 24	2547
9	Sun	W.	43 57 42	2956	45 28 50	2973	46 59 36	2991	48 30 0	3009
	Pollux	E.	47 37 35	2774	46 2 33	2800	44 28 5	2827	42 54 12	2855
	Regulus	E.	83 38 37	2632	82 0 25	2649	80 22 37	2666	78 45 11	2683
10	Sun	W.	55 56 35	3095	57 24 51	3112	58 52 46	3129	60 20 21	3144
	Pollux	E.	35 14 29	3020	33 44 41	3060	32 15 43	3104	30 47 38	3151
	Regulus	E.	70 43 41	2766	69 8 29	2783	67 33 39	2799	65 59 10	2815
11	Sun	W.	67 33 31	3222	68 59 14	3236	70 24 41	3250	71 49 51	3264
	Aldebaran	W.	21 59 7	2924	23 30 56	2930	25 2 37	2937	26 34 9	2945
	Pollux	E.	23 43 35	3490	22 23 0	3592	21 4 17	3713	19 47 44	3861
	Regulus	E.	58 11 45	2891	56 39 14	2905	55 7 2	2919	53 35 7	2934
	Saturn	E.	104 25 15	2857	102 52 1	2870	101 19 4	2883	99 46 24	2895
12	Sun	W.	78 51 52	3325	80 15 34	3337	81 39 3	3347	83 2 20	3358
	Aldebaran	W.	34 9 15	2986	35 39 45	2994	37 10 5	3003	38 40 14	3010
	Regulus	E.	45 59 56	3000	44 29 43	3013	42 59 46	3025	41 30 4	3037
	Saturn	E.	92 6 51	2953	90 35 39	2963	89 4 40	2973	87 33 53	2982
	Spica	E.	99 37 20	2958	98 6 15	2968	96 35 22	2978	95 4 42	2987
13	Sun	W.	89 56 3	3400	91 18 20	3407	92 40 29	3414	94 2 30	3420
	Aldebaran	W.	46 8 44	3046	47 38 1	3051	49 7 11	3056	50 36 15	3060
	Regulus	E.	34 5 18	3097	32 37 5	3110	31 9 8	3123	29 41 26	3137
	Saturn	E.	80 2 42	3022	78 32 57	3029	77 3 20	3035	75 33 51	3042
	Spica	E.	87 34 4	3027	86 4 25	3034	84 34 54	3040	83 5 31	3046
14	Sun	W.	100 51 4	3442	102 12 33	3446	103 33 58	3447	104 55 21	3450
	Aldebaran	W.	58 0 12	3079	59 28 47	3081	60 57 20	3083	62 25 50	3085
	Regulus	E.	22 27 30	3225	21 1 50	3250	19 36 40	3281	18 12 6	3319
	Saturn	E.	68 8 7	3065	66 39 15	3068	65 10 26	3071	63 41 41	3073
	Spica	E.	75 40 8	3067	74 11 18	3069	72 42 31	3071	71 13 46	3073
15	Sun	W.	111 41 54	3451	113 3 13	3450	114 24 33	3448	115 45 55	3446
	Aldebaran	W.	69 48 3	3086	71 16 30	3084	72 44 59	3082	74 13 30	3081
	Pollux	W.	29 11 21	3442	30 32 50	3410	31 54 55	3382	33 17 32	3357
	Saturn	E.	56 18 31	3080	54 49 57	3080	53 21 23	3080	51 52 49	3080
	Spica	E.	63 50 26	3075	62 21 46	3074	60 53 5	3073	59 24 22	3071

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Jupiter	E	103° 53′ 33″	3040	102° 24′ 10″	3041	100° 54′ 48″	3042	99° 25′ 27″	3041
16	Sun	W.	117 7 19	3444	118 28 46	3441	119 50 16	3438	121 11 50	3435
	Aldebaran	W.	75 42 3	3078	77 10 39	3075	78 39 19	3073	80 8 2	3069
	Pollux	W.	34 40 38	3334	36 4 10	3318	37 28 7	3294	38 52 26	3276
	Saturn	E.	50 24 15	3079	48 55 40	3078	47 27 4	3077	45 58 26	3075
	Spica	E.	57 55 37	3069	56 26 49	3066	54 57 58	3063	53 29 3	3059
	Jupiter	E.	91 58 25	3034	90 28 54	3030	88 59 19	3028	87 29 41	3024
	Antares	E.	103 21 54	3096	101 53 39	3093	100 25 21	3089	98 56 58	3086
17	Aldebaran	W.	87 32 57	3045	89 2 14	3039	90 31 38	3033	92 1 10	3027
	Pollux	W.	45 58 52	3200	47 25 1	3187	48 51 26	3173	50 18 7	3161
	Saturn	E.	38 34 48	3067	37 5 58	3066	35 37 7	3065	34 8 14	3064
	Spica	E.	46 3 12	3036	44 33 44	3030	43 4 9	3024	41 34 26	3018
	Jupiter	E.	80 0 12	3001	78 30 0	2994	76 59 40	2989	75 29 13	2982
	Antares	E.	91 33 48	3062	90 4 52	3056	88 35 48	3050	87 6 37	3044
18	Aldebaran	W.	99 30 53	2991	101 1 17	2982	102 31 52	2974	104 2 37	2966
	Pollux	W.	57 35 15	3101	59 3 24	3088	60 31 48	3077	62 0 26	3065
	Regulus	W.	20 35 0	3146	22 2 14	3118	23 30 2	3092	24 58 21	3070
	Spica	E.	34 3 45	2981	32 33 9	2973	31 2 23	2965	29 31 26	2957
	Jupiter	E.	67 54 49	2946	66 23 28	2938	64 51 57	2929	63 20 15	2920
	Antares	E.	79 38 40	3008	78 8 37	3001	76 38 25	2993	75 8 3	2985
19	Pollux	W.	69 27 12	3007	70 57 16	2996	72 27 34	2985	73 58 6	2973
	Regulus	W.	32 26 3	2981	33 56 39	2966	35 27 34	2951	36 58 48	2937
	Jupiter	E.	55 38 56	2875	54 6 5	2865	52 33 1	2855	50 59 44	2845
	Antares	E.	67 33 35	2941	66 2 8	2932	64 30 30	2924	62 58 41	2914
20	Pollux	W.	81 34 23	2916	83 6 21	2905	84 38 33	2894	86 10 59	2884
	Regulus	W.	44 39 18	2871	46 12 14	2859	47 45 26	2847	49 18 53	2834
	Jupiter	E.	43 10 6	2794	41 35 30	2783	40 0 40	2773	38 25 37	2763
	Antares	E.	55 16 41	2869	53 43 42	2860	52 10 32	2852	50 37 11	2843
	α Aquilæ	E.	106 39 3	2270	105 14 16	2253	103 49 9	2236	102 23 43	2220
21	Pollux	W.	93 56 33	2881	95 30 20	2821	97 4 20	2811	98 38 33	2801
	Regulus	W.	57 10 8	2775	58 45 9	2763	60 20 26	2751	61 55 58	2740
	Jupiter	E.	30 26 53	2710	28 50 26	2699	27 13 45	2689	25 36 51	2679
	Antares	E.	42 47 45	2804	41 13 22	2797	39 38 50	2792	38 4 11	2785
	α Aquilæ	E.	95 12 6	3151	93 44 58	3139	92 17 36	3128	90 50 0	3117
22	Regulus	W.	69 57 17	2686	71 34 16	2675	73 11 29	2666	74 48 55	2655
	Saturn	W.	24 47 32	2758	26 22 55	2735	27 58 48	2715	29 35 8	2696
	Spica	W.	15 57 55	2663	17 35 24	2652	19 13 8	2643	20 51 5	2633
	Antares	E.	30 9 28	2774	28 34 26	2775	26 59 26	2780	25 24 32	2788
	α Aquilæ	E.	83 28 58	3073	82 0 15	3066	80 31 24	3060	79 2 25	3055
	Fomalhaut	E.	111 58 22	3214	110 32 30	3193	109 6 13	3173	107 39 32	3154
23	Regulus	W.	82 59 28	2607	84 38 14	2598	86 17 12	2589	87 56 22	2580
	Saturn	W.	37 42 32	2620	39 21 0	2607	40 59 46	2594	42 38 49	2583
	Spica	W.	29 4 5	2586	30 43 19	2577	32 22 46	2568	34 2 25	2559
	α Aquilæ	E.	71 36 18	3043	70 6 58	3043	68 37 39	3045	67 8 22	3047
	Fomalhaut	E.	100 20 43	3073	98 52 0	3069	97 23 0	3047	95 53 45	3035
	Mars	E.	103 22 21	2871	101 49 25	2861	100 16 16	2852	98 42 55	2842

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	Jupiter	E	97° 56′ 5″	3041	96° 26′ 43″	3039	94° 57′ 19″	3038	93° 27′ 53″	3036
16	Sun	W.	122 33 29	3430	123 55 12	3424	125 17 1	3419	126 38 56	3414
	Aldebaran	W.	81 36 50	3065	83 5 43	3060	84 34 42	3056	86 3 46	3050
	Pollux	W.	40 17 6	3259	41 42 5	3243	43 7 23	3228	44 32 59	3214
	Saturn	E.	44 29 46	3074	43 1 5	3073	41 32 22	3070	40 3 36	3069
	Spica	E.	52 0 3	3056	50 30 59	3051	49 1 49	3047	47 32 34	3041
	Jupiter	E.	85 59 58	3020	84 30 10	3016	83 0 17	3011	81 30 18	3005
	Antares	E.	97 28 31	3082	95 59 59	3077	94 31 21	3072	93 2 38	3067
17	Aldebaran	W.	93 30 49	3020	95 0 37	3014	96 30 33	3006	98 0 38	2998
	Pollux	W.	51 45 3	3148	53 12 14	3136	54 39 40	3124	56 7 20	3112
	Saturn	E.	32 39 20	3064	31 10 26	3063	29 41 31	3064	28 12 37	3065
	Spica	E.	40 4 35	3011	38 34 36	3004	37 4 28	2997	35 34 11	2989
	Jupiter	E.	73 58 38	2975	72 27 54	2969	70 57 2	2961	69 26 0	2954
	Antares	E.	85 37 19	3037	84 7 52	3030	82 38 17	3023	81 8 33	3016
18	Aldebaran	W.	105 33 32	2958	107 4 38	2949	108 35 55	2939	110 7 24	2930
	Pollux	W.	63 29 19	3053	64 58 26	3042	66 27 47	3030	67 57 22	3018
	Regulus	W.	26 27 7	3050	27 56 18	3031	29 25 52	3014	30 55 47	2997
	Spica	E.	28 0 19	2949	26 29 2	2940	24 57 34	2932	23 25 56	2924
	Jupiter	E.	61 48 22	2912	60 16 18	2902	58 44 2	2894	57 11 35	2884
	Antares	E.	73 37 31	2976	72 6 48	2967	70 35 54	2959	69 4 50	2950
19	Pollux	W.	75 28 53	2962	76 59 54	2950	78 31 9	2939	80 2 39	2927
	Regulus	W.	38 30 20	2924	40 2 9	2910	41 34 15	2897	43 6 38	2883
	Jupiter	E.	49 26 15	2835	47 52 33	2825	46 18 37	2815	44 44 28	2805
	Antares	E.	61 26 40	2906	59 54 28	2896	58 22 4	2887	56 49 28	2878
20	Pollux	W.	87 43 38	2873	89 16 31	2862	90 49 38	2852	92 22 59	2842
	Regulus	W.	50 52 37	2822	52 26 36	2810	54 0 51	2798	55 35 22	2786
	Jupiter	E.	36 50 20	2752	35 14 49	2741	33 39 4	2732	32 3 6	2720
	Antares	E.	49 3 39	2835	47 29 56	2826	45 56 2	2818	44 21 58	2811
	a Aquilæ	E.	100 57 58	3205	99 31 55	3191	98 5 35	3178	96 38 59	3163
21	Pollux	W.	100 12 59	2792	101 47 37	2782	103 22 28	2774	104 57 30	2765
	Regulus	W.	63 31 45	2729	65 7 46	2718	66 44 2	2707	68 20 32	2696
	Jupiter	E.	23 59 43	2669	22 22 21	2658	20 44 45	2649	19 6 56	2639
	Antares	E.	36 29 24	2781	34 54 31	2777	33 19 33	2774	31 44 31	2773
	a Aquilæ	E.	89 22 11	3106	87 54 9	3097	86 25 56	3088	84 57 32	3080
22	Regulus	W.	76 26 35	2646	78 4 28	2635	79 42 35	2626	81 20 55	2617
	Saturn	W.	31 11 53	2678	32 49 2	2663	34 26 32	2648	36 4 22	2633
	Spica	W.	22 29 15	2624	24 7 38	2614	25 46 14	2604	27 25 3	2595
	Antares	E.	23 49 48	2800	22 15 20	2818	20 41 15	2841	19 7 41	2874
	a Aquilæ	E.	77 33 20	3051	76 4 10	3047	74 34 56	3044	73 5 38	3043
	Fomalhaut	E.	106 12 28	3136	104 45 2	3119	103 17 15	3102	101 49 8	3087
23	Regulus	W.	89 35 45	2571	91 15 20	2562	92 55 7	2554	94 35 5	2546
	Saturn	W.	44 18 8	2571	45 57 43	2560	47 37 33	2550	49 17 37	2540
	Spica	W.	35 42 17	2560	37 22 21	2541	39 2 37	2533	40 43 4	2525
	a Aquilæ	E.	65 39 8	3052	64 10 0	3058	62 40 59	3065	61 12 7	3074
	Fomalhaut	E.	94 24 16	3024	92 54 33	3014	91 24 38	3005	89 54 31	2997
	Mars	E.	97 9 22	2832	95 35 36	2823	94 1 38	2815	92 27 29	2806

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
24	Regulus	W.	96° 15′ 14″	2538	97° 55′ 35″	2530	99° 36′ 6″	2522	101° 16′ 48″	2515
	Saturn	W.	50 57 55	2530	52 38 27	2520	54 19 12	2511	56 0 10	2502
	Spica	W.	42 23 43	2517	44 4 33	2508	45 45 35	2500	47 26 48	2493
	α Aquilæ	E.	59 43 26	3086	58 14 59	3099	56 46 48	3114	55 18 55	3132
	Fomalhaut	E.	88 24 14	2989	86 53 48	2983	85 23 14	2977	83 52 33	2973
	Mars	E.	90 53 8	2797	89 18 36	2788	87 43 52	2779	86 8 57	2772
	α Pegasi	E.	105 51 37	2678	104 14 27	2667	102 37 3	2657	100 59 25	2648
25	Saturn	W.	64 28 0	2461	66 10 8	2453	67 52 27	2446	69 34 56	2438
	Spica	W.	55 55 28	2456	57 37 43	2449	59 20 8	2442	61 2 43	2436
	Jupiter	W.	22 49 32	2422	24 32 36	2415	26 15 50	2408	27 59 14	2401
	α Aquilæ	E.	48 6 6	3270	46 41 19	3311	45 17 20	3356	43 54 13	3408
	Fomalhaut	E.	76 18 4	2964	74 47 6	2965	73 16 9	2968	71 45 16	2971
	Mars	E.	78 11 50	2734	76 35 55	2727	74 59 51	2719	73 23 37	2713
	α Pegasi	E.	92 48 17	2607	91 9 31	2599	89 30 34	2592	87 51 28	2586
	Sun	E.	137 44 8	2779	136 9 12	2771	134 34 6	2763	132 58 50	2756
26	Saturn	W.	78 9 52	2405	79 53 19	2399	81 36 55	2393	83 20 40	2387
	Spica	W.	69 37 56	2403	71 21 26	2398	73 5 4	2391	74 48 51	2386
	Jupiter	W.	36 38 38	2368	38 22 59	2362	40 7 28	2356	41 52 6	2350
	Antares	W.	24 52 21	2546	26 32 30	2525	28 13 9	2505	29 54 15	2487
	Fomalhaut	E.	64 12 34	3012	62 42 36	3025	61 12 54	3040	59 43 31	3058
	Mars	E.	65 20 23	2683	63 43 20	2678	62 6 10	2672	60 28 53	2667
	α Pegasi	E.	79 33 58	2559	77 54 7	2556	76 14 11	2552	74 34 10	2550
	Venus	E.	103 1 23	2821	101 27 23	2814	99 53 13	2807	98 18 54	2801
	Sun	E.	125 0 6	2721	123 23 54	2714	121 47 33	2707	120 11 3	2701
27	Saturn	W.	92 1 31	2359	93 46 5	2354	95 30 46	2349	97 15 34	2344
	Spica	W.	83 29 50	2357	85 14 26	2353	86 59 9	2348	88 43 59	2342
	Jupiter	W.	50 37 20	2322	52 22 47	2317	54 8 22	2311	55 54 5	2307
	Antares	W.	38 25 6	2424	40 8 7	2418	41 51 23	2405	43 34 51	2396
	Mars	E.	52 20 52	2646	50 42 59	2643	49 5 2	2639	47 27 0	2637
	Fomalhaut	E.	52 23 4	3188	50 56 41	3225	49 31 2	3267	48 6 12	3314
	α Pegasi	E.	66 13 12	2540	64 32 55	2540	62 52 38	2541	61 12 22	2543
	Venus	E.	90 25 12	2769	88 50 3	2763	87 14 47	2757	85 39 23	2751
	Sun	E.	112 6 27	2671	110 29 8	2665	108 51 41	2660	107 14 7	2654
28	Spica	W.	97 30 0	2318	99 15 33	2314	101 1 12	2309	102 46 58	2305
	Jupiter	W.	64 44 26	2283	66 30 51	2278	68 17 23	2274	70 4 1	2270
	Antares	W.	52 15 5	2359	53 59 38	2353	55 44 21	2347	57 29 12	2342
	Mars	E.	39 16 11	2631	37 37 58	2632	35 59 46	2634	34 21 37	2638
	α Pegasi	E.	52 51 58	2564	51 12 14	2573	49 32 42	2583	47 53 23	2593
	Venus	E.	77 40 33	2725	76 4 26	2720	74 28 13	2716	72 51 54	2710
	Sun	E.	99 4 25	2628	97 26 8	2624	95 47 45	2618	94 9 15	2614
29	Jupiter	W.	78 58 43	2250	80 45 56	2246	82 33 15	2243	84 20 39	2239
	Antares	W.	66 15 23	2317	68 0 58	2312	69 46 40	2308	71 32 28	2304
	α Pegasi	E.	39 41 42	2688	38 4 46	2718	36 28 30	2753	34 53 0	2793
	Venus	E.	64 48 48	2690	63 11 55	2687	61 34 57	2683	59 57 54	2680
	Sun	E.	85 55 14	2593	84 16 9	2588	82 36 58	2585	80 57 42	2582
30	Antares	W.	80 22 47	2288	82 9 4	2285	83 55 25	2283	85 41 49	2281
	α Aquilæ	W.	35 42 50	3688	36 59 50	3571	38 18 56	3469	39 39 55	3379
	Venus	E.	51 51 39	2666	50 14 14	2665	48 36 47	2663	46 59 18	2662
	Sun	E.	72 40 15	2566	71 0 33	2564	69 20 48	2561	67 41 0	2559

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
24	Regulus	W.	102 57 40	2507	104 38 43	2501	106 19 55	2494	108 1 17	2487
	Saturn	W.	57 41 20	2493	59 22 43	2485	61 4 17	2477	62 46 3	2469
	Spica	W.	49 8 11	2485	50 49 45	2478	52 31 29	2471	54 13 23	2463
	a Aquilæ	E.	53 51 24	3153	52 24 18	3176	50 57 40	3204	49 31 35	3234
	Fomalhaut	E.	82 21 46	2969	80 50 54	2966	79 19 59	2965	77 49 2	2964
	Mars	E.	84 33 52	2764	82 58 37	2756	81 23 11	2748	79 47 35	2741
	a Pegasi	E.	99 21 35	2638	97 43 32	2630	96 5 18	2622	94 26 53	2614
25	Saturn	W.	71 17 36	2431	73 0 26	2425	74 43 25	2418	76 26 34	2412
	Spica	W.	62 45 27	2429	64 28 20	2422	66 11 23	2416	67 54 35	2410
	Jupiter	W.	29 42 48	2394	31 26 32	2387	33 10 25	2381	34 54 27	2375
	a Aquilæ	E.	42 32 6	3467	41 11 5	3535	39 51 20	3613	38 33 0	3702
	Fomalhaut	E.	70 14 27	2976	68 43 44	2983	67 13 10	2991	65 42 46	3001
	Mars	E.	71 47 15	2707	70 10 44	2701	68 34 5	2695	66 57 18	2689
	a Pegasi	E.	86 12 14	2580	84 32 51	2574	82 53 21	2569	81 13 43	2564
	Sun	E.	131 23 24	2748	129 47 48	2741	128 12 3	2735	126 36 9	2728
26	Saturn	W.	85 4 34	2381	86 48 36	2375	88 32 47	2370	90 17 5	2364
	Spica	W.	76 32 46	2380	78 16 50	2374	80 1 2	2368	81 45 22	2363
	Jupiter	W.	43 36 52	2344	45 21 47	2339	47 6 50	2333	48 52 1	2328
	Antares	W.	31 35 46	2472	33 17 39	2458	34 59 51	2446	36 42 20	2434
	Fomalhaut	E.	58 14 30	3078	56 45 54	3101	55 17 45	3126	53 50 7	3155
	Mars	E.	58 51 29	2663	57 13 59	2657	55 36 22	2654	53 58 40	2649
	a Pegasi	E.	72 54 5	2546	71 13 56	2543	69 33 43	2542	67 53 28	2541
	Venus	E.	96 44 27	2794	95 9 51	2787	93 35 6	2781	92 0 13	2775
	Sun	E.	118 34 24	2695	116 57 37	2689	115 20 42	2682	113 43 38	2677
27	Saturn	W.	99 0 29	2339	100 45 31	2335	102 30 39	2331	104 15 54	2326
	Spica	W.	90 28 57	2337	92 14 2	2333	93 59 14	2327	95 44 34	2322
	Jupiter	W.	57 39 55	2302	59 25 52	2297	61 11 56	2291	62 58 8	2287
	Antares	W.	45 18 32	2388	47 2 24	2380	48 46 27	2373	50 30 41	2366
	Mars	E.	45 48 55	2635	44 10 47	2632	42 32 36	2632	40 54 24	2631
	Fomalhaut	E.	46 42 17	3367	45 19 23	3428	43 57 38	3496	42 37 9	3572
	a Pegasi	E.	59 32 8	2545	57 51 57	2548	56 11 51	2553	54 31 51	2558
	Venus	E.	84 3 51	2746	82 28 12	2741	80 52 26	2735	79 16 33	2730
	Sun	E.	105 36 25	2649	103 58 36	2643	102 20 39	2638	100 42 35	2633
28	Spica	W.	104 32 50	2301	106 18 48	2297	108 4 52	2294	109 51 1	2289
	Jupiter	W.	71 50 45	2265	73 37 36	2261	75 24 33	2258	77 11 35	2253
	Antares	W.	59 14 11	2336	60 59 18	2331	62 44 32	2326	64 29 54	2321
	Mars	E.	32 43 33	2641	31 5 34	2646	29 27 42	2655	27 50 1	2666
	a Pegasi	E.	46 14 19	2607	44 35 34	2623	42 57 10	2641	41 19 11	2663
	Venus	E.	71 15 28	2706	69 38 56	2702	68 2 19	2698	66 25 36	2694
	Sun	E.	92 30 39	2610	90 51 57	2604	89 13 8	2601	87 34 14	2596
29	Jupiter	W.	86 8 8	2236	87 55 42	2233	89 43 20	2231	91 31 2	2228
	Antares	W.	73 18 22	2300	75 4 21	2297	76 50 25	2294	78 36 34	2291
	a Pegasi	E.	33 18 23	2842	31 44 50	2899	30 12 30	2967	28 41 36	3050
	Venus	E.	58 20 47	2676	56 43 35	2674	55 6 20	2671	53 29 1	2669
	Sun	E.	79 18 22	2578	77 38 57	2574	75 59 27	2572	74 19 53	2569
30	Antares	W.	87 28 16	2280	89 14 45	2278	91 1 17	2277	92 47 50	2276
	a Aquilæ	W.	41 2 36	3298	42 26 50	3226	43 52 28	3164	45 19 20	3109
	Venus	E.	45 21 47	2660	43 44 15	2660	42 6 41	2660	40 29 8	2661
	Sun	E.	66 1 9	2558	64 21 16	2556	62 41 20	2555	61 1 23	2553

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sun.	1	2 35 34.40	9.553	N.15 14 20.1	45.04	15 54.01	66.10	3 4.98	0.303
Mon.	2	2 39 23.94	9.576	15 32 13.4	44.41	15 53.77	66.18	3 11.98	0.280
Tues.	3	2 43 14.05	9.600	15 49 51.5	43.76	15 53.54	66.26	3 18.41	0.256
Wed.	4	2 47 4.72	9.623	16 7 13.9	43.10	15 53.31	66.34	3 24.27	0.233
Thur.	5	2 50 55.95	9.647	16 24 20.4	42.43	15 53.08	66.42	3 29.57	0.209
Fri.	6	2 54 47.76	9.670	16 41 10.6	41.74	15 52.86	66.50	3 34.31	0.186
Sat.	7	2 58 40.14	9.694	16 57 44.0	41.04	15 52.64	66.58	3 38.48	0.162
Sun.	8	3 2 33.09	9.717	17 14 0.6	40.33	15 52.42	66.66	3 42.08	0.139
Mon.	9	3 6 26.59	9.741	17 29 59.8	39.60	15 52.21	66.74	3 45.12	0.119
Tues.	10	3 10 20.66	9.764	17 45 41.6	38.87	15 52.00	66.83	3 47.59	0.092
Wed.	11	3 14 15.29	9.788	18 1 5.6	38.12	15 51.80	66.92	3 49.50	0.068
Thur.	12	3 18 10.49	9.811	18 16 11.3	37.36	15 51.60	67.00	3 50.87	0.045
Fri.	13	3 22 6.25	9.835	18 30 58.6	36.58	15 51.40	67.08	3 51.66	0.021
Sat.	14	3 26 2.56	9.858	18 45 27.3	35.80	15 51.20	67.16	3 51.90	0.002
Sun.	15	3 29 59.42	9.881	18 59 37.1	35.00	15 51.00	67.24	3 51.60	0.025
Mon.	16	3 33 56.83	9.904	19 13 27.5	34.19	15 50.82	67.32	3 50.74	0.048
Tues.	17	3 37 54.79	9.927	19 26 58.4	33.37	15 50.63	67.40	3 49.34	0.070
Wed.	18	3 41 53.29	9.947	19 40 9.5	32.54	15 50.45	67.48	3 47.39	0.093
Thur.	19	3 45 52.34	9.972	19 53 0.6	31.70	15 50.27	67.56	3 44.90	0.115
Fri.	20	3 49 51.94	9.994	20 5 31.4	30.85	15 50.09	67.63	3 41.87	0.138
Sat.	21	3 53 52.08	10.016	20 17 41.7	29.99	15 49.92	67.71	3 38.31	0.160
Sun.	22	3 57 52.75	10.038	20 29 31.3	29.12	15 49.75	67.79	3 34.21	0.182
Mon.	23	4 1 53.95	10.060	20 40 59.7	28.24	15 49.58	67.86	3 29.57	0.204
Tues.	24	4 5 55.68	10.081	20 52 6.8	27.35	15 49.41	67.93	3 24.42	0.226
Wed.	25	4 9 57.92	10.103	21 2 52.5	26.45	15 49.24	68.00	3 18.74	0.247
Thur.	26	4 14 0.69	10.124	21 13 16.6	25.55	15 49.08	68.07	3 12.55	0.268
Fri.	27	4 18 3.95	10.145	21 23 18.8	24.63	15 48.92	68.14	3 5.87	0.289
Sat.	28	4 22 7.70	10.165	21 32 58.8	23.70	15 48.76	68.21	2 58.69	0.309
Sun.	29	4 26 11.93	10.185	21 42 16.5	22.77	15 48.61	68.27	2 51.04	0.328
Mon.	30	4 30 16.62	10.204	21 51 11.7	21.83	15 48.46	68.33	2 42.93	0.347
Tues.	31	4 34 21.76	10.222	21 59 44.2	20.87	15 48.32	68.39	2 34.38	0.365
Wed.	32	4 38 27.32	10.239	N.22 7 53.7	19.91	15 48.18	68.44	2 25.41	0.382

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Equation of Time, *to be added to Mean Time*	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Sun.	1	2 35 34.89	9.553	N.15 14 22.4	45.04	3 5.00	0.303	2 38 39.89
Mon.	2	2 39 24.46	9.576	15 32 15.8	44.41	3 12.03	0.280	2 42 36.44
Tues.	3	2 43 14.58	9.600	15 49 54.0	43.76	3 18.42	0.256	2 46 33.00
Wed.	4	2 47 5.27	9.623	16 7 16.4	43.10	3 24.28	0.233	2 50 29.55
Thur.	5	2 50 56.53	9.647	16 24 22.9	42.43	3 29.58	0.209	2 54 26.11
Fri.	6	2 54 48.34	9.670	16 41 13.1	41.74	3 34.32	0.186	2 58 22.66
Sat.	7	2 58 40.73	9.694	16 57 46.5	41.04	3 38.49	0.162	3 2 19.22
Sun.	8	3 2 33.69	9.717	17 14 3.1	40.33	3 42.08	0.139	3 6 15.77
Mon.	9	3 6 27.20	9.741	17 30 2.3	39.60	3 45.13	0.115	3 10 12.33
Tues.	10	3 10 21.28	9.764	17 45 44.0	38.87	3 47.60	0.092	3 14 8.88
Wed.	11	3 14 15.92	9.788	18 1 8.0	38.12	3 49.51	0.068	3 18 5.43
Thur.	12	3 18 11.12	9.811	18 16 13.7	37.36	3 50.87	0.045	3 22 1.99
Fri.	13	3 22 6.89	9.835	18 31 1.0	36.58	3 51.66	0.021	3 25 58.55
Sat.	14	3 26 3.20	9.858	18 45 29.6	35.80	3 51.90	0.002	3 29 55.10
Sun.	15	3 30 0.06	9.881	18 59 39.3	35.00	3 51.60	0.025	3 33 51.66
Mon.	16	3 33 57.47	9.904	19 13 29.7	34.19	3 50.74	0.048	3 37 48.21
Tues.	17	3 37 55.43	9.927	19 27 0.6	33.37	3 49.34	0.070	3 41 44.77
Wed.	18	3 41 53.93	9.949	19 40 11.6	32.54	3 47.39	0.093	3 45 41.32
Thur.	19	3 45 52.97	9.972	19 53 2.6	31.70	3 44.91	0.115	3 49 37.88
Fri.	20	3 49 52.56	9.994	20 5 33.3	30.85	3 41.87	0.138	3 53 34.43
Sat.	21	3 53 52.69	10.016	20 17 43.6	29.99	3 38.30	0.160	3 57 30.99
Sun.	22	3 57 53.35	10.038	20 29 33.1	29.12	3 34.20	0.182	4 1 27.55
Mon.	23	4 1 54.54	10.060	20 41 1.4	28.24	3 29.56	0.204	4 5 24.10
Tues.	24	4 5 56.25	10.081	20 52 8.4	27.35	3 24.41	0.226	4 9 20.66
Wed.	25	4 9 58.48	10.103	21 2 54.0	26.45	3 18.73	0.247	4 13 17.21
Thur.	26	4 14 1.23	10.124	21 13 18.0	25.55	3 12.54	0.268	4 17 13.77
Fri.	27	4 18 4.47	10.145	21 23 20.1	24.63	3 5.86	0.289	4 21 10.33
Sat.	28	4 22 8.20	10.165	21 33 0.0	23.70	2 58.68	0.309	4 25 6.88
Sun.	29	4 26 12.41	10.185	21 42 17.6	22.77	2 51.03	0.328	4 29 3.44
Mon.	30	4 30 17.08	10.204	21 51 12.7	21.83	2 42.92	0.347	4 33 0.00
Tues.	31	4 34 22.19	10.222	21 59 45.1	20.87	2 34.36	0.365	4 36 56.55
Wed.	22	4 38 27.72	10.239	N.22 7 54.5	19.91	2 25.39	0.382	4 40 53.11

Note. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
1	122	41° 20′ 6″.0	19′ 37″.4	145″.42	+0″.27	0.0036250	45.5	21h 17m 50s.20
2	123	42 18 15.2	17 46.5	145.36	0.20	.0037336	44.9	21 13 54.29
3	124	43 16 22.9	15 54.1	145.29	+0.11	.0038407	44.2	21 9 58.38
4	125	44 14 29.1	14 0.2	145.23	—0.01	.0039461	43.5	21 6 2.47
5	126	45 12 33.7	12 4.6	145.16	0.14	.0040497	42.7	21 2 6.56
6	127	46 10 36.6	10 7.4	145.09	0.27	.0041515	42.0	20 58 10.65
7	128	47 8 38.0	8 8.7	145.02	0.41	.0042515	41.2	20 54 14.74
8	129	48 6 37.7	6 8.3	144.95	0.54	.0043497	40.5	20 50 18.83
9	130	49 4 35.7	4 6.1	144.88	0.65	.0044460	39.7	20 46 22.93
10	131	50 2 32.0	2 2.2	144.80	0.74	.0045405	39.0	20 42 27.02
11	132	50 60 26.5	59 56.6	144.73	0.82	.0046333	38.3	20 38 31.11
12	133	51 58 19.2	57 49.2	144.66	0.87	.0047246	37.6	20 34 35.20
13	134	52 56 10.2	55 40.1	144.59	0.89	.0048142	37.0	20 30 39.29
14	135	53 53 59.5	53 29.2	144.51	0.87	.0049023	36.4	20 26 43.38
15	136	54 51 47.0	51 16.5	144.44	0.81	.0049890	35.9	20 22 47.47
16	137	55 49 32.9	49 2.3	144.37	0.73	.0050745	35.4	20 18 51.56
17	138	56 47 17.1	46 46.4	144.31	0.64	.0051589	34.9	20 14 55.65
18	139	57 44 59.7	44 28.9	144.24	0.52	.0052423	34.5	20 10 59.74
19	140	58 42 40.8	42 9.8	144.18	0.39	.0053247	34.1	20 7 3.84
20	141	59 40 20.6	39 49.4	144.13	0.26	.0054060	33.7	20 3 7.93
21	142	60 37 59.1	37 27.8	144.08	0.13	.0054863	33.2	19 59 12.02
22	143	61 35 36.4	35 5.0	144.03	—0.01	.0055656	32.8	19 55 16.11
23	144	62 33 12.4	32 40.9	143.98	+0.09	.0056438	32.3	19 51 20.20
24	145	63 30 47.3	30 15.6	143.93	0.17	.0057210	31.8	19 47 24.28
25	146	64 28 21.2	27 49.3	143.89	0.23	.0057970	31.3	19 43 28.37
26	147	65 25 54.2	25 22.2	143.85	0.25	.0058717	30.7	19 39 32.46
27	148	66 23 26.4	22 54.3	143.82	0.24	.0059449	30.1	19 35 36.55
28	149	67 20 57.7	20 25.4	143.79	0.20	.0060166	29.4	19 31 40.64
29	150	68 18 28.2	17 55.7	143.76	0.14	.0060865	28.7	19 27 44.72
30	151	69 15 58.0	15 25.3	143.72	+0.06	.0061544	27.9	19 23 48.81
31	152	70 13 27.0	12 54.2	143.69	—0.04	.0062204	27.1	19 19 52.90
32	153	71 10 55.2	10 22.3	143.66	—0.17	0.0062842	26.2	19 15 56.99

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″		h m	m	d
1	16 14.4	16 14.1	59 29.6	−0.01	59 28.6	−0.17	20 51.1	2.15	24.9
2	16 13.3	16 11.9	59 25.5	0.34	59 20.3	0.52	21 42.8	2.17	25.9
3	16 9.9	16 7.3	59 13.1	0.70	59 3.6	0.88	22 35.2	2.20	26.9
4	16 4.1	16 0.4	58 51.9	1.06	58 38.2	1.22	23 28.5	2.24	27.9
5	15 56.1	15 51.5	58 22.5	1.37	58 5.3	1.49	δ		28.9
6	15 46.4	15 41.0	57 46.6	1.60	57 26.9	1.67	0 22.6	2.26	0.5
7	15 35.4	15 29.8	57 6.5	1.71	56 45.8	1.72	1 16.8	2.24	1.5
8	15 24.2	15 18.7	56 25.2	1.70	56 5.0	1.64	2 10.3	2.20	2.5
9	15 13.5	15 8.5	55 45.7	1.56	55 27.5	1.45	3 2.2	2.12	3.5
10	15 3.9	14 59.9	55 10.9	1.32	54 55.9	1.15	3 51.9	2.02	4.5
11	14 56.4	14 53.5	54 43.1	0.98	54 32.4	0.79	4 39.2	1.92	5.5
12	14 51.2	14 49.6	54 24.1	0.59	54 18.3	−0.37	5 24.3	1.84	6.5
13	14 48.8	14 48.6	54 15.1	−0.16	54 14.4	+0.05	6 7.7	1.79	7.5
14	14 49.1	14 50.3	54 16.3	+0.27	54 20.8	0.48	6 50.1	1.76	8.5
15	14 52.2	14 54.8	54 27.9	0.69	54 37.3	0.88	7 32.2	1.77	9.5
16	14 58.0	15 1.7	54 49.0	1.06	55 2.7	1.22	8 14.9	1.81	10.5
17	15 5.9	15 10.6	55 18.3	1.36	55 35.4	1.48	8 59.0	1.88	11.5
18	15 15.7	15 21.0	55 53.9	1.58	56 13.2	1.64	9 45.3	1.99	12.5
19	15 26.4	15 31.9	56 33.3	1.68	56 53.5	1.68	10 34.5	2.11	13.5
20	15 37.3	15 42.7	57 13.6	1.66	57 33.2	1.60	11 26.7	2.24	14.5
21	15 47.8	15 52.6	57 51.9	1.51	58 9.5	1.40	12 21.9	2.34	15.5
22	15 57.0	16 1.0	58 25.6	1.28	58 40.2	1.13	13 19.2	2.40	16.5
23	16 4.4	16 7.3	58 52.8	0.97	59 3.5	0.80	14 17.3	2.41	17.5
24	16 9.6	16 11.4	59 12.0	0.63	59 18.6	0.46	15 14.8	2.36	18.5
25	16 12.6	16 13.4	59 23.2	+0.30	59 25.9	+0.15	16 10.7	2.29	19.5
26	16 13.6	16 13.4	59 26.8	−0.00	59 26.0	−0.13	17 4.6	2.21	20.5
27	16 12.8	16 11.8	59 23.7	0.25	59 20.0	0.36	17 56.7	2.15	21.5
28	16 10.5	16 8.8	59 15.1	0.46	59 9.0	0.55	18 47.6	2.11	22.5
29	16 6.8	16 4.6	59 1.8	0.64	58 53.6	0.72	19 38.1	2.11	23.5
30	16 2.1	15 59.3	58 44.4	0.80	58 34.2	0.88	20 28.9	2.13	24.5
31	15 56.3	15 53.1	58 23.2	0.96	58 11.2	1.03	21 20.5	2.17	25.5
32	15 49.6	15 45.8	57 58.4	−1.10	57 44.7	−1.17	22 13.1	2.21	26.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 1.					TUESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 46 34.50	2.2391	S. 2 33 17.7	12.324	0	0 34 8.05	2.2571	N. 7 12 29.9	11.597
1	22 48 48.83	2.2386	2 20 57.8	12.339	1	0 36 23.51	2.2583	7 24 4.3	11.550
2	22 51 3.13	2.2380	2 8 37.1	12.352	2	0 38 39.04	2.2595	7 35 35.9	11.503
3	22 53 17.41	2.2375	1 56 15.6	12.364	3	0 40 54.65	2.2607	7 47 4.7	11.455
4	22 55 31.65	2.2370	1 43 53.5	12.376	4	0 43 10.33	2.2619	7 58 30.5	11.407
5	22 57 45.85	2.2366	1 31 30.7	12.385	5	0 45 26.09	2.2632	8 9 53.4	11.356
6	23 0 0.05	2.2363	1 19 7.3	12.393	6	0 47 41.92	2.2645	8 21 13.3	11.304
7	23 2 14.22	2.2360	1 6 43.6	12.399	7	0 49 57.83	2.2659	8 32 29.9	11.251
8	23 4 28.37	2.2358	0 54 19.5	12.406	8	0 52 13.82	2.2672	8 43 43.3	11.197
9	23 6 42.51	2.2356	0 41 55.0	12.410	9	0 54 29.90	2.2685	8 54 53.5	11.142
10	23 8 56.64	2.2354	0 29 30.3	12.415	10	0 56 46.05	2.2699	9 6 0.2	11.085
11	23 11 10.76	2.2353	0 17 5.4	12.418	11	0 59 2.29	2.2713	9 17 3.5	11.027
12	23 13 24.87	2.2352	S. 0 4 40.4	12.418	12	1 1 18.61	2.2727	9 28 3.4	10.968
13	23 15 38.98	2.2351	N. 0 7 44.6	12.417	13	1 3 35.01	2.2741	9 38 59.7	10.908
14	23 17 53.09	2.2351	0 20 9.6	12.415	14	1 5 51.50	2.2755	9 49 52.3	10.846
15	23 20 7.19	2.2351	0 32 34.5	12.412	15	1 8 8.08	2.2770	10 0 41.2	10.783
16	23 22 21.29	2.2351	0 44 59.0	12.407	16	1 10 24.74	2.2785	10 11 26.2	10.720
17	23 24 35.40	2.2352	0 57 23.2	12.401	17	1 12 41.49	2.2799	10 22 7.4	10.655
18	23 26 49.52	2.2353	1 9 47.0	12.394	18	1 14 58.34	2.2814	10 32 44.8	10.589
19	23 29 3.64	2.2355	1 22 10.3	12.386	19	1 17 15.27	2.2829	10 43 18.0	10.522
20	23 31 17.78	2.2358	1 34 33.0	12.377	20	1 19 32.29	2.2844	10 53 47.2	10.454
21	23 33 31.94	2.2361	1 46 55.0	12.367	21	1 21 49.40	2.2860	11 4 12.4	10.385
22	23 35 46.11	2.2364	1 59 16.5	12.356	22	1 24 6.61	2.2876	11 14 33.4	10.314
23	23 38 0.31	2.2368	N. 2 11 37.5	12.343	23	1 26 23.91	2.2890	N.11 24 50.0	10.242
	MONDAY 2.					WEDNESDAY 4.			
0	23 40 14.53	2.2372	N. 2 23 58.2	12.327	0	1 28 41.30	2.2905	N.11 35 2.3	10.169
1	23 42 28.77	2.2376	2 36 17.2	12.310	1	1 30 58.78	2.2920	11 45 10.1	10.094
2	23 44 43.04	2.2381	2 48 35.3	12.293	2	1 33 16.35	2.2935	11 55 13.5	10.019
3	23 46 57.35	2.2386	3 0 52.4	12.275	3	1 35 34.00	2.2951	12 5 12.4	9.943
4	23 49 11.68	2.2391	3 13 8.2	12.256	4	1 37 51.75	2.2966	12 15 6.6	9.867
5	23 51 26.04	2.2396	3 25 22.9	12.235	5	1 40 9.59	2.2981	12 24 56.3	9.789
6	23 53 40.44	2.2402	3 37 36.4	12.213	6	1 42 27.52	2.2996	12 34 41.4	9.710
7	23 55 54.87	2.2408	3 49 48.4	12.189	7	1 44 45.54	2.3010	12 44 21.6	9.631
8	23 58 9.34	2.2415	4 1 59.0	12.165	8	1 47 3.65	2.3025	12 53 57.0	9.550
9	0 0 23.86	2.2422	4 14 8.1	12.140	9	1 49 21.84	2.3040	13 3 27.6	9.468
10	0 2 38.41	2.2430	4 26 15.5	12.113	10	1 51 40.13	2.3055	13 12 53.1	9.386
11	0 4 53.02	2.2438	4 38 21.3	12.084	11	1 53 58.51	2.3070	13 22 13.7	9.302
12	0 7 7.68	2.2446	4 50 25.5	12.053	12	1 56 16.97	2.3085	13 31 29.3	9.217
13	0 9 22.38	2.2455	5 2 27.7	12.021	13	1 58 35.52	2.3099	13 40 39.6	9.130
14	0 11 37.14	2.2464	5 14 27.9	11.988	14	2 0 54.16	2.3113	13 49 44.7	9.043
15	0 13 51.96	2.2473	5 26 26.2	11.954	15	2 3 12.88	2.3127	13 58 44.7	8.955
16	0 16 6.83	2.2483	5 38 22.4	11.920	16	2 5 31.68	2.3140	14 7 39.3	8.866
17	0 18 21.76	2.2493	5 50 16.5	11.884	17	2 7 50.56	2.3154	14 16 28.5	8.777
18	0 20 36.75	2.2503	6 2 8.6	11.847	18	2 10 9.53	2.3168	14 25 12.4	8.687
19	0 22 51.80	2.2514	6 13 58.2	11.809	19	2 12 28.58	2.3181	14 33 50.8	8.596
20	0 25 6.92	2.2525	6 25 45.5	11.770	20	2 14 47.71	2.3194	14 42 23.7	8.503
21	0 27 22.10	2.2536	6 37 30.5	11.729	21	2 17 6.91	2.3207	14 50 51.2	8.409
22	0 29 37.34	2.2547	6 49 12.8	11.687	22	2 19 26.19	2.3220	14 59 12.9	8.315
23	0 31 52.66	2.2559	7 0 52.6	11.643	23	2 21 45.55	2.3232	15 7 28.9	8.220
24	0 34 8.05	2.2571	N. 7 12 29.9	11.597	24	2 24 4.98	2.3244	N.15 15 39.2	8.124

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 24 4.98	2.3244	N.15 15 39.2	8.124
1	2 26 24.48	2.3256	15 23 43.7	8.027
2	2 28 44.05	2.3268	15 31 42.4	7.930
3	2 31 3.70	2.3280	15 39 35.2	7.832
4	2 33 23.42	2.3291	15 47 22.1	7.733
5	2 35 43.20	2.3302	15 55 3.1	7.633
6	2 38 3.04	2.3313	16 2 38.2	7.533
7	2 40 22.95	2.3324	16 10 7.2	7.433
8	2 42 42.92	2.3334	16 17 30.1	7.331
9	2 45 2.95	2.3343	16 24 47.0	7.229
10	2 47 23.04	2.3352	16 31 57.7	7.127
11	2 49 43.18	2.3361	16 39 2.2	7.023
12	2 52 3.36	2.3369	16 46 0.4	6.918
13	2 54 23.59	2.3377	16 52 52.3	6.813
14	2 56 43.87	2.3384	16 59 37.9	6.708
15	2 59 4.21	2.3391	17 6 17.1	6.602
16	3 1 24.58	2.3398	17 12 49.9	6.495
17	3 3 44.99	2.3405	17 19 16.3	6.387
18	3 6 5.44	2.3411	17 25 36.4	6.279
19	3 8 25.92	2.3417	17 31 49.8	6.170
20	3 10 46.43	2.3422	17 37 56.7	6.061
21	3 13 6.97	2.3427	17 43 57.2	5.952
22	3 15 27.54	2.3431	17 49 51.1	5.844
23	3 17 48.13	2.3434	N.17 55 38.4	5.734

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 20 8.74	2.3436	N.18 1 19.0	5.622
1	3 22 29.36	2.3438	18 6 52.9	5.510
2	3 24 49.99	2.3440	18 12 20.1	5.398
3	3 27 10.63	2.3441	18 17 40.6	5.286
4	3 29 31.28	2.3442	18 22 54.3	5.173
5	3 31 51.93	2.3443	18 28 1.3	5.060
6	3 34 12.58	2.3444	18 33 1.5	4.947
7	3 36 33.23	2.3444	18 37 54.9	4.834
8	3 38 53.89	2.3443	18 42 41.5	4.720
9	3 41 14.56	2.3442	18 47 21.3	4.606
10	3 43 35.22	2.3441	18 51 54.2	4.491
11	3 45 55.86	2.3439	18 56 20.2	4.376
12	3 48 16.47	2.3436	19 0 39.4	4.261
13	3 50 37.07	2.3431	19 4 51.7	4.147
14	3 52 57.64	2.3425	19 8 57.1	4.031
15	3 55 18.18	2.3419	19 12 55.5	3.915
16	3 57 38.69	2.3414	19 16 47.0	3.800
17	3 59 59.16	2.3408	19 20 31.5	3.684
18	4 2 19.58	2.3402	19 24 9.1	3.568
19	4 4 39.97	2.3396	19 27 39.7	3.451
20	4 7 0.31	2.3387	19 31 3.3	3.335
21	4 9 20.61	2.3379	19 34 19.9	3.219
22	4 11 40.86	2.3370	19 37 29.6	3.104
23	4 14 1.05	2.3360	19 40 32.3	2.988
24	4 16 21.19	2.3349	N.19 43 28.1	2.871

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 16 21.19	2.3349	N.19 43 28.1	2.871
1	4 18 41.25	2.3338	19 46 16.8	2.754
2	4 21 1.24	2.3326	19 48 58.6	2.637
3	4 23 21.14	2.3314	19 51 33.3	2.520
4	4 25 40.99	2.3301	19 54 1.1	2.404
5	4 28 0.76	2.3288	19 56 21.9	2.288
6	4 30 20.44	2.3275	19 58 35.6	2.172
7	4 32 40.05	2.3261	20 0 42.5	2.056
8	4 34 59.57	2.3246	20 2 42.4	1.940
9	4 37 19.00	2.3231	20 4 35.3	1.824
10	4 39 38.34	2.3215	20 6 21.3	1.709
11	4 41 57.58	2.3198	20 8 0.4	1.594
12	4 44 16.71	2.3180	20 9 32.5	1.479
13	4 46 35.74	2.3162	20 10 57.8	1.364
14	4 48 54.66	2.3143	20 12 16.2	1.249
15	4 51 13.46	2.3124	20 13 27.7	1.134
16	4 53 32.16	2.3105	20 14 32.2	1.018
17	4 55 50.73	2.3085	20 15 29.9	0.903
18	4 58 9.17	2.3064	20 16 20.7	0.788
19	5 0 27.50	2.3043	20 17 4.6	0.674
20	5 2 45.69	2.3021	20 17 41.7	0.562
21	5 5 3.75	2.2999	20 18 11.9	0.450
22	5 7 21.68	2.2976	20 18 35.4	0.338
23	5 9 39.46	2.2952	N.20 18 52.1	0.226

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 11 57.10	2.2928	N.20 19 2.1	0.113
1	5 14 14.59	2.2903	20 19 5.4	0.001
2	5 16 31.93	2.2878	20 19 2.0	0.111
3	5 18 49.13	2.2853	20 18 51.9	0.223
4	5 21 6.18	2.2828	20 18 35.1	0.335
5	5 23 23.07	2.2801	20 18 11.7	0.446
6	5 25 39.79	2.2774	20 17 41.6	0.556
7	5 27 56.36	2.2747	20 17 5.0	0.666
8	5 30 12.76	2.2719	20 16 21.8	0.775
9	5 32 28.99	2.2691	20 15 31.9	0.884
10	5 34 45.06	2.2663	20 14 35.7	0.992
11	5 37 0.95	2.2634	20 13 33.0	1.100
12	5 39 16.66	2.2604	20 12 23.7	1.208
13	5 41 32.20	2.2574	20 11 8.0	1.316
14	5 43 47.55	2.2543	20 9 45.9	1.422
15	5 46 2.71	2.2512	20 8 17.3	1.527
16	5 48 17.69	2.2481	20 6 42.6	1.631
17	5 50 32.48	2.2450	20 5 1.6	1.736
18	5 52 47.08	2.2419	20 3 14.2	1.840
19	5 55 1.50	2.2387	20 1 20.7	1.944
20	5 57 15.72	2.2354	19 59 21.0	2.047
21	5 59 29.74	2.2321	19 57 15.0	2.149
22	6 1 43.56	2.2287	19 55 3.0	2.251
23	6 3 57.18	2.2254	19 52 44.9	2.352
24	6 6 10.60	2.2220	N.19 50 20.8	2.453

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 9.					**WEDNESDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 6 10.60	2.2220	N.19 50 20.8	2.453	0	7 48 35.87	2.0441	N.16 8 23.1	6.536
1	6 8 23.82	2.2185	19 47 50.6	2.554	1	7 50 38.41	2.0406	16 1 49.0	6.603
2	6 10 36.83	2.2150	19 45 14.3	2.654	2	7 52 40.74	2.0370	15 55 10.8	6.670
3	6 12 49.62	2.2115	19 42 32.0	2.754	3	7 54 42.85	2.0334	15 48 28.5	6.737
4	6 15 2.21	2.2080	19 39 43.8	2.854	4	7 56 44.74	2.0298	15 41 42.3	6.804
5	6 17 14.59	2.2045	19 36 49.7	2.952	5	7 58 46.43	2.0263	15 34 52.1	6.870
6	6 19 26.75	2.2010	19 33 49.6	3.049	6	8 0 47.91	2.0228	15 27 57.9	6.935
7	6 21 38.70	2.1974	19 30 43.8	3.145	7	8 2 49.17	2.0194	15 20 59.9	6.999
8	6 23 50.44	2.1939	19 27 32.2	3.242	8	8 4 50.23	2.0159	15 13 58.1	7.063
9	6 26 1.96	2.1903	19 24 14.9	3.338	9	8 6 51.09	2.0125	15 6 52.4	7.127
10	6 28 13.27	2.1867	19 20 51.9	3.432	10	8 8 51.73	2.0091	14 59 43.0	7.169
11	6 30 24.36	2.1831	19 17 23.2	3.525	11	8 10 52.18	2.0058	14 52 29.8	7.251
12	6 32 35.24	2.1795	19 13 48.8	3.618	12	8 12 52.43	2.0025	14 45 12.9	7.312
13	6 34 45.90	2.1758	19 10 8.9	3.711	13	8 14 52.48	1.9992	14 37 52.5	7.371
14	6 36 56.33	2.1720	19 6 23.5	3.803	14	8 16 52.34	1.9959	14 30 28.5	7.431
15	6 39 6.54	2.1682	19 2 32.5	3.895	15	8 18 52.00	1.9926	14 23 0.8	7.490
16	6 41 16.51	2.1644	18 58 36.1	3.986	16	8 20 51.46	1.9894	14 15 29.7	7.549
17	6 43 26.26	2.1606	18 54 34.2	4.076	17	8 22 50.73	1.9862	14 7 55.1	7.607
18	6 45 35.78	2.1568	18 50 26.9	4.166	18	8 24 49.82	1.9831	14 0 16.9	7.663
19	6 47 45.07	2.1530	18 46 14.3	4.255	19	8 26 48.71	1.9800	13 52 35.5	7.719
20	6 49 54.13	2.1492	18 41 56.4	4.344	20	8 28 47.42	1.9769	13 44 50.7	7.775
21	6 52 2.97	2.1454	18 37 33.1	4.432	21	8 30 45.95	1.9738	13 37 2.4	7.831
22	6 54 11.57	2.1415	18 33 4.6	4.519	22	8 32 44.28	1.9707	13 29 10.9	7.887
23	6 56 19.95	2.1377	N.18 28 30.9	4.605	23	8 34 42.44	1.9678	N.13 21 16.1	7.941
	TUESDAY 10.					**THURSDAY 12.**			
0	6 58 28.10	2.1340	N.18 23 52.0	4.690	0	8 36 40.42	1.9650	N.13 13 17.9	7.994
1	7 0 36.04	2.1303	18 19 8.1	4.774	1	8 38 38.23	1.9621	13 5 16.7	8.047
2	7 2 43.75	2.1265	18 14 19.2	4.858	2	8 40 35.87	1.9592	12 57 12.3	8.099
3	7 4 51.22	2.1227	18 9 25.2	4.942	3	8 42 33.34	1.9563	12 49 4.8	8.150
4	7 6 58.46	2.1188	18 4 26.2	5.025	4	8 44 30.64	1.9535	12 40 54.3	8.201
5	7 9 5.48	2.1150	17 59 22.3	5.107	5	8 46 27.77	1.9507	12 32 40.7	8.251
6	7 11 12.27	2.1112	17 54 13.4	5.188	6	8 48 24.73	1.9480	12 24 24.1	8.301
7	7 13 18.83	2.1075	17 48 59.7	5.269	7	8 50 21.52	1.9452	12 16 4.6	8.350
8	7 15 25.17	2.1037	17 43 41.2	5.349	8	8 52 18.15	1.9425	12 7 42.2	8.399
9	7 17 31.28	2.0998	17 38 17.8	5.428	9	8 54 14.63	1.9399	11 59 16.8	8.447
10	7 19 37.15	2.0960	17 32 49.8	5.507	10	8 56 10.94	1.9373	11 50 48.6	8.493
11	7 21 42.80	2.0922	17 27 17.1	5.585	11	8 58 7.11	1.9348	11 42 17.6	8.539
12	7 23 48.23	2.0885	17 21 39.6	5.662	12	9 0 3.13	1.9324	11 33 43.9	8.585
13	7 25 53.43	2.0848	17 15 57.6	5.738	13	9 1 59.00	1.9300	11 25 7.4	8.631
14	7 27 58.41	2.0810	17 10 11.1	5.814	14	9 3 54.73	1.9276	11 16 28.2	8.676
15	7 30 3.16	2.0772	17 4 20.0	5.889	15	9 5 50.31	1.9252	11 7 46.3	8.720
16	7 32 7.68	2.0735	16 58 24.5	5.963	16	9 7 45.74	1.9228	10 59 1.8	8.764
17	7 34 11.98	2.0697	16 52 24.5	6.037	17	9 9 41.04	1.9205	10 50 14.7	8.807
18	7 36 16.06	2.0660	16 46 20.1	6.110	18	9 11 36.21	1.9182	10 41 25.0	8.850
19	7 38 19.91	2.0623	16 40 11.4	6.183	19	9 13 31.23	1.9160	10 32 32.8	8.892
20	7 40 23.54	2.0586	16 33 58.3	6.255	20	9 15 26.13	1.9139	10 23 38.1	8.933
21	7 42 26.95	2.0549	16 27 40.8	6.326	21	9 17 20.91	1.9118	10 14 40.8	8.974
22	7 44 30.14	2.0513	16 21 19.1	6.397	22	9 19 15.55	1.9097	10 5 41.1	9.015
23	7 46 33.11	2.0477	16 14 53.2	6.467	23	9 21 10.08	1.9077	9 56 39.0	9.055
24	7 48 35.87	2.0441	N.16 8 23.1	6.536	24	9 23 4.49	1.9057	N. 9 47 34.6	9.094

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 23 4.49	1.9057	N. 9 47 34.6	9.094
1	9 24 58.77	1.9038	9 38 27.9	9.132
2	9 26 52.95	1.9019	9 29 18.9	9.169
3	9 28 47.02	1.9001	9 20 7.5	9.206
4	9 30 40.97	1.8983	9 10 54.0	9.243
5	9 32 34.82	1.8966	9 1 38.3	9.279
6	9 34 28.57	1.8949	8 52 20.5	9.315
7	9 36 22.21	1.8932	8 43 0.6	9.351
8	9 38 15.76	1.8917	8 33 38.5	9.386
9	9 40 9.22	1.8902	8 24 14.3	9.420
10	9 42 2.59	1.8887	8 14 48.1	9.453
11	9 43 55.87	1.8872	8 5 19.9	9.486
12	9 45 49.07	1.8858	7 55 49.8	9.518
13	9 47 42.17	1.8844	7 46 17.8	9.550
14	9 49 35.20	1.8831	7 36 43.9	9.581
15	9 51 28.15	1.8818	7 27 8.0	9.612
16	9 53 21.02	1.8806	7 17 30.4	9.642
17	9 55 13.82	1.8795	7 7 51.0	9.672
18	9 57 6.56	1.8784	6 58 9.8	9.702
19	9 58 59.24	1.8773	6 48 26.9	9.731
20	10 0 51.85	1.8764	6 38 42.2	9.759
21	10 2 44.40	1.8755	6 28 55.8	9.787
22	10 4 36.90	1.8746	6 19 7.8	9.814
23	10 6 29.36	1.8738	N. 6 9 18.2	9.841

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 8 21.77	1.8730	N. 5 59 26.9	9.868
1	10 10 14.12	1.8722	5 49 34.2	9.892
2	10 12 6.43	1.8715	5 39 40.0	9.917
3	10 13 58.71	1.8708	5 29 44.2	9.941
4	10 15 50.94	1.8702	5 19 47.1	9.965
5	10 17 43.14	1.8697	5 9 48.5	9.988
6	10 19 35.31	1.8692	4 59 48.5	10.011
7	10 21 27.44	1.8688	4 49 47.2	10.033
8	10 23 19.56	1.8685	4 39 44.6	10.055
9	10 25 11.66	1.8682	4 29 40.6	10.077
10	10 27 3.74	1.8679	4 19 35.4	10.098
11	10 28 55.81	1.8677	4 9 28.9	10.118
12	10 30 47.87	1.8675	3 59 21.2	10.137
13	10 32 39.91	1.8673	3 49 12.5	10.156
14	10 34 31.95	1.8672	3 39 2.6	10.174
15	10 36 23.99	1.8672	3 28 51.6	10.192
16	10 38 16.02	1.8673	3 18 39.6	10.209
17	10 40 8.07	1.8674	3 8 26.6	10.225
18	10 42 0.12	1.8675	2 58 12.6	10.241
19	10 43 52.17	1.8677	2 47 57.7	10.257
20	10 45 44.25	1.8680	2 37 41.8	10.272
21	10 47 36.34	1.8683	2 27 25.0	10.287
22	10 49 28.45	1.8687	2 17 7.3	10.302
23	10 51 20.59	1.8691	2 6 48.8	10.316
24	10 53 12.75	1.8696	N. 1 56 29.4	10.329

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 53 12.75	1.8696	N. 1 56 29.4	10.329
1	10 55 4.94	1.8701	1 46 9.3	10.341
2	10 56 57.17	1.8707	1 35 48.5	10.353
3	10 58 49.43	1.8713	1 25 27.0	10.364
4	11 0 41.72	1.8720	1 15 4.9	10.374
5	11 2 34.06	1.8728	1 4 42.2	10.384
6	11 4 26.46	1.8736	0 54 18.9	10.393
7	11 6 18.90	1.8744	0 43 55.1	10.402
8	11 8 11.39	1.8753	0 33 30.7	10.411
9	11 10 3.94	1.8763	0 23 5.8	10.419
10	11 11 56.54	1.8774	0 12 40.4	10.426
11	11 13 49.22	1.8785	N. 0 2 14.6	10.432
12	11 15 41.97	1.8796	S. 0 8 11.6	10.438
13	11 17 34.78	1.8807	0 18 38.1	10.444
14	11 19 27.66	1.8819	0 29 4.9	10.449
15	11 21 20.62	1.8832	0 39 32.0	10.453
16	11 23 13.65	1.8845	0 49 59.3	10.457
17	11 25 6.77	1.8859	1 0 26.8	10.460
18	11 26 59.97	1.8874	1 10 54.5	10.462
19	11 28 53.27	1.8889	1 21 22.3	10.464
20	11 30 46.66	1.8905	1 31 50.2	10.465
21	11 32 40.13	1.8921	1 42 18.1	10.466
22	11 34 33.71	1.8937	1 52 46.0	10.466
23	11 36 27.39	1.8954	S. 2 3 13.9	10.465

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 38 21.17	1.8973	S. 2 13 41.9	10.464
1	11 40 15.07	1.8992	2 24 9.6	10.462
2	11 42 9.08	1.9011	2 34 37.2	10.460
3	11 44 3.20	1.9030	2 45 4.7	10.457
4	11 45 57.45	1.9050	2 55 31.9	10.453
5	11 47 51.82	1.9071	3 5 58.9	10.449
6	11 49 46.30	1.9092	3 16 25.7	10.444
7	11 51 40.92	1.9113	3 26 52.2	10.438
8	11 53 35.67	1.9135	3 37 18.2	10.431
9	11 55 30.55	1.9158	3 47 43.8	10.423
10	11 57 25.58	1.9182	3 58 8.9	10.415
11	11 59 20.75	1.9207	4 8 33.5	10.406
12	12 1 16.05	1.9232	4 18 57.7	10.397
13	12 3 11.52	1.9257	4 29 21.2	10.387
14	12 5 7.14	1.9282	4 39 44.1	10.376
15	12 7 2.90	1.9307	4 50 6.4	10.365
16	12 8 58.83	1.9333	5 0 27.9	10.353
17	12 10 54.91	1.9360	5 10 48.7	10.340
18	12 12 51.15	1.9387	5 21 8.8	10.327
19	12 14 47.56	1.9415	5 31 28.0	10.313
20	12 16 44.14	1.9443	5 41 46.3	10.298
21	12 18 40.88	1.9471	5 52 3.7	10.282
22	12 20 37.78	1.9500	6 2 20.1	10.266
23	12 22 34.87	1.9530	6 12 35.5	10.249
24	12 24 32.16	1.9561	S. 6 22 49.9	10.231

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 24 32.16	1.9561	S. 6 22 49.9	10.231
1	12 26 29.62	1.9593	6 33 3.2	10.211
2	12 28 27.27	1.9625	6 43 15.3	10.191
3	12 30 25.12	1.9657	6 53 26.1	10.171
4	12 32 23.16	1.9689	7 3 35.7	10.150
5	12 34 21.39	1.9722	7 13 44.0	10.129
6	12 36 19.82	1.9756	7 23 51.1	10.107
7	12 38 18.46	1.9789	7 33 56.7	10.084
8	12 40 17.30	1.9823	7 44 1.0	10.060
9	12 42 16.33	1.9857	7 54 3.8	10.036
10	12 44 15.58	1.9892	8 4 5.1	10.008
11	12 46 15.04	1.9928	8 14 4.7	9.981
12	12 48 14.72	1.9964	8 24 2.8	9.955
13	12 50 14.62	2.0001	8 33 59.1	9.925
14	12 52 14.74	2.0038	8 43 53.7	9.896
15	12 54 15.08	2.0076	8 53 46.5	9.866
16	12 56 15.65	2.0114	9 3 37.4	9.835
17	12 58 16.45	2.0152	9 13 26.5	9.803
18	13 0 17.48	2.0191	9 23 13.8	9.770
19	13 2 18.75	2.0230	9 32 59.0	9.737
20	13 4 20.25	2.0270	9 42 42.2	9.703
21	13 6 21.99	2.0310	9 52 23.3	9.668
22	13 8 23.98	2.0351	10 2 2.2	9.631
23	13 10 26.21	2.0393	S. 10 11 38.9	9.594

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 12 28.69	2.0433	S. 10 21 13.5	9.556
1	13 14 31.42	2.0475	10 30 45.6	9.517
2	13 16 34.40	2.0517	10 40 15.4	9.477
3	13 18 37.63	2.0560	10 49 42.8	9.436
4	13 20 41.12	2.0603	10 59 7.6	9.394
5	13 22 44.87	2.0646	11 8 29.9	9.351
6	13 24 48.87	2.0689	11 17 49.8	9.307
7	13 26 53.14	2.0733	11 27 6.9	9.263
8	13 28 57.67	2.0778	11 36 21.3	9.217
9	13 31 2.47	2.0822	11 45 33.0	9.170
10	13 33 7.54	2.0867	11 54 41.8	9.123
11	13 35 12.88	2.0912	12 3 47.7	9.074
12	13 37 18.49	2.0957	12 12 50.7	9.024
13	13 39 24.38	2.1003	12 21 50.6	8.974
14	13 41 30.54	2.1049	12 30 47.5	8.923
15	13 43 36.97	2.1096	12 39 41.3	8.871
16	13 45 43.69	2.1143	12 48 31.8	8.817
17	13 47 50.69	2.1190	12 57 19.2	8.763
18	13 49 57.97	2.1237	13 6 3.4	8.708
19	13 52 5.54	2.1285	13 14 44.1	8.652
20	13 54 13.39	2.1333	13 23 21.4	8.594
21	13 56 21.53	2.1381	13 31 55.5	8.536
22	13 58 29.97	2.1430	13 40 25.9	8.476
23	14 0 38.70	2.1478	13 48 52.6	8.416
24	14 2 47.71	2.1527	S. 13 57 15.6	8.354

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 2 47.71	2.1527	S. 13 57 15.6	8.354
1	14 4 57.02	2.1576	14 5 34.9	8.290
2	14 7 6.62	2.1624	14 13 50.3	8.226
3	14 9 16.51	2.1673	14 22 1.9	8.162
4	14 11 26.70	2.1722	14 30 9.6	8.097
5	14 13 37.18	2.1771	14 38 13.4	8.030
6	14 15 47.95	2.1820	14 46 13.2	7.962
7	14 17 59.02	2.1870	14 54 8.8	7.894
8	14 20 10.39	2.1919	15 2 0.3	7.824
9	14 22 22.05	2.1969	15 9 47.7	7.753
10	14 24 34.01	2.2019	15 17 30.6	7.681
11	14 26 46.27	2.2068	15 25 9.2	7.607
12	14 28 58.84	2.2118	15 32 43.4	7.532
13	14 31 11.70	2.2168	15 40 13.1	7.457
14	14 33 24.86	2.2218	15 47 38.2	7.381
15	14 35 38.32	2.2268	15 54 58.7	7.304
16	14 37 52.08	2.2318	16 2 14.5	7.226
17	14 40 6.14	2.2367	16 9 25.6	7.146
18	14 42 20.49	2.2417	16 16 32.0	7.066
19	14 44 35.14	2.2467	16 23 33.4	6.984
20	14 46 50.09	2.2517	16 30 29.9	6.902
21	14 49 5.34	2.2567	16 37 21.5	6.818
22	14 51 20.90	2.2617	16 44 8.0	6.733
23	14 53 36.75	2.2666	S. 16 50 49.3	6.646

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 55 52.88	2.2715	S. 16 57 25.5	6.556
1	14 58 9.31	2.2763	17 3 56.3	6.470
2	15 0 26.03	2.2812	17 10 21.8	6.382
3	15 2 43.05	2.2861	17 16 42.0	6.292
4	15 5 0.36	2.2910	17 22 56.8	6.201
5	15 7 17.96	2.2959	17 29 6.1	6.108
6	15 9 35.86	2.3007	17 35 9.9	6.014
7	15 11 54.05	2.3055	17 41 7.9	5.920
8	15 14 12.52	2.3103	17 47 0.2	5.825
9	15 16 31.27	2.3150	17 52 46.9	5.729
10	15 18 50.31	2.3197	17 58 27.8	5.632
11	15 21 9.63	2.3243	18 4 2.7	5.533
12	15 23 29.23	2.3289	18 9 31.6	5.432
13	15 25 49.10	2.3335	18 14 54.5	5.332
14	15 28 9.25	2.3381	18 20 11.4	5.231
15	15 30 29.67	2.3426	18 25 22.3	5.128
16	15 32 50.36	2.3471	18 30 26.9	5.025
17	15 35 11.32	2.3515	18 35 25.3	4.921
18	15 37 32.55	2.3559	18 40 17.4	4.816
19	15 39 54.04	2.3604	18 45 3.1	4.710
20	15 42 15.79	2.3647	18 49 42.5	4.603
21	15 44 37.81	2.3690	18 54 15.5	4.495
22	15 47 0.07	2.3732	18 58 41.9	4.387
23	15 49 22.59	2.3773	19 3 1.8	4.277
24	15 51 45.36	2.3814	S. 19 7 15.2	4.167

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 51 45.36	2.3814	S.19 7 15.2	4.167
1	15 54 8.37	2.3855	19 11 21.7	4.054
2	15 56 31.62	2.3895	19 15 21.5	3.941
3	15 58 55.11	2.3934	19 19 14.6	3.828
4	16 1 18.83	2.3973	19 23 0.9	3.714
5	16 3 42.79	2.4011	19 26 40.3	3.599
6	16 6 6.97	2.4049	19 30 12.8	3.483
7	16 8 31.38	2.4087	19 33 38.3	3.367
8	16 10 56.01	2.4124	19 36 56.8	3.250
9	16 13 20.85	2.4160	19 40 8.3	3.132
10	16 15 45.91	2.4195	19 43 12.6	3.014
11	16 18 11.18	2.4229	19 46 9.8	2.894
12	16 20 36.65	2.4262	19 49 0.0	2.773
13	16 23 2.32	2.4294	19 51 42.7	2.653
14	16 25 28.18	2.4326	19 54 18.3	2.531
15	16 27 54.23	2.4358	19 56 46.6	2.408
16	16 30 20.47	2.4389	19 59 7.4	2.286
17	16 32 46.89	2.4419	20 1 20.8	2.162
18	16 35 13.49	2.4448	20 3 26.9	2.038
19	16 37 40.27	2.4476	20 5 25.4	1.913
20	16 40 7.21	2.4504	20 7 16.4	1.787
21	16 42 34.32	2.4531	20 8 59.9	1.661
22	16 45 1.59	2.4557	20 10 35.8	1.535
23	16 47 29.01	2.4582	S.20 12 4.1	1.408

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 49 56.58	2.4606	S.20 13 24.8	1.281
1	16 52 24.28	2.4629	20 14 37.8	1.154
2	16 54 52.12	2.4652	20 15 43.2	1.026
3	16 57 20.10	2.4674	20 16 40.9	0.897
4	16 59 48.22	2.4696	20 17 30.8	0.768
5	17 2 16.45	2.4715	20 18 13.0	0.638
6	17 4 44.80	2.4734	20 18 47.4	0.508
7	17 7 13.26	2.4752	20 19 14.0	0.378
8	17 9 41.82	2.4769	20 19 32.8	0.248
9	17 12 10.49	2.4785	20 19 43.8	0.117
10	17 14 39.24	2.4800	20 19 46.9	0.013
11	17 17 8.08	2.4815	20 19 42.2	0.144
12	17 19 37.01	2.4829	20 19 29.6	0.275
13	17 22 6.03	2.4843	20 19 9.1	0.407
14	17 24 35.12	2.4855	20 18 40.7	0.539
15	17 27 4.29	2.4867	20 18 4.5	0.671
16	17 29 33.52	2.4878	20 17 20.3	0.804
17	17 32 2.81	2.4888	20 16 28.1	0.936
18	17 34 32.17	2.4897	20 15 28.0	1.068
19	17 37 1.57	2.4905	20 14 20.0	1.200
20	17 39 31.02	2.4912	20 13 4.0	1.332
21	17 42 0.52	2.4918	20 11 40.1	1.465
22	17 44 30.04	2.4923	20 10 8.2	1.598
23	17 46 59.59	2.4926	20 8 28.4	1.729
24	17 49 29.18	2.4928	S.20 6 40.6	1.861

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 49 29.18	2.4928	S.20 6 40.6	1.861
1	17 51 58.75	2.4930	20 4 45.0	1.993
2	17 54 28.33	2.4930	20 2 41.5	2.124
3	17 56 57.92	2.4930	20 0 30.0	2.256
4	17 59 27.50	2.4930	19 58 10.7	2.388
5	18 1 57.07	2.4929	19 55 43.5	2.520
6	18 4 26.63	2.4927	19 53 8.3	2.652
7	18 6 56.17	2.4924	19 50 25.3	2.783
8	18 9 25.69	2.4919	19 47 34.4	2.914
9	18 11 55.20	2.4913	19 44 35.7	3.045
10	18 14 24.65	2.4906	19 41 29.2	3.175
11	18 16 54.06	2.4899	19 38 14.8	3.305
12	18 19 23.43	2.4891	19 34 52.6	3.434
13	18 21 52.74	2.4882	19 31 22.8	3.562
14	18 24 22.00	2.4873	19 27 45.2	3.691
15	18 26 51.22	2.4863	19 23 59.9	3.820
16	18 29 20.37	2.4853	19 20 6.9	3.948
17	18 31 49.45	2.4842	19 16 6.2	4.074
18	18 34 18.47	2.4830	19 11 58.0	4.200
19	18 36 47.40	2.4816	19 7 42.2	4.328
20	18 39 16.25	2.4801	19 3 18.8	4.455
21	18 41 45.03	2.4786	18 58 47.7	4.581
22	18 44 13.71	2.4770	18 54 9.2	4.706
23	18 46 42.30	2.4754	S.18 49 23.2	4.830

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 49 10.79	2.4738	S.18 44 29.6	4.953
1	18 51 39.17	2.4721	18 39 28.8	5.075
2	18 54 7.44	2.4703	18 34 20.7	5.196
3	18 56 35.61	2.4685	18 29 5.2	5.318
4	18 59 3.66	2.4666	18 23 42.5	5.439
5	19 1 31.59	2.4646	18 18 12.6	5.559
6	19 3 59.41	2.4625	18 12 35.4	5.679
7	19 6 27.09	2.4603	18 6 51.1	5.798
8	19 8 54.64	2.4581	18 0 59.7	5.916
9	19 11 22.07	2.4559	17 55 1.2	6.033
10	19 13 49.35	2.4536	17 48 55.8	6.149
11	19 16 16.50	2.4513	17 42 43.4	6.265
12	19 18 43.51	2.4489	17 36 24.1	6.380
13	19 21 10.37	2.4465	17 29 57.9	6.493
14	19 23 37.08	2.4440	17 23 25.0	6.606
15	19 26 3.65	2.4414	17 16 45.3	6.718
16	19 28 30.05	2.4388	17 9 58.9	6.829
17	19 30 56.30	2.4362	17 3 5.9	6.939
18	19 33 22.40	2.4336	16 56 6.3	7.048
19	19 35 48.33	2.4309	16 49 0.2	7.157
20	19 38 14.10	2.4281	16 41 47.6	7.265
21	19 40 39.71	2.4253	16 34 28.4	7.372
22	19 43 5.14	2.4225	16 27 2.9	7.478
23	19 45 30.41	2.4197	16 19 31.1	7.583
24	19 47 55.51	2.4169	S.16 11 52.9	7.686

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 25.					FRIDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	19 47 55.51	2.4169	S. 16 11 52.9	7.686	0	21 40 24.01	2.2725	S. 8 24 42.6	11.325
1	19 50 20.44	2.4140	16 4 8.7	7.789	1	21 42 40.28	2.2700	8 13 21.6	11.373
2	19 52 45.19	2.4110	15 56 18.4	7.891	2	21 44 56.40	2.2674	8 1 57.9	11.418
3	19 55 9.77	2.4080	15 48 21.9	7.991	3	21 47 12.38	2.2649	7 50 31.6	11.462
4	19 57 34.16	2.4051	15 40 19.6	8.089	4	21 49 28.20	2.2624	7 39 2.6	11.505
5	19 59 58.37	2.4021	15 32 11.4	8.187	5	21 51 43.87	2.2599	7 27 31.1	11.546
6	20 2 22.41	2.3991	15 23 57.2	8.285	6	21 53 59.40	2.2575	7 15 57.1	11.586
7	20 4 46.26	2.3960	15 15 37.3	8.382	7	21 56 14.78	2.2551	7 4 20.8	11.626
8	20 7 9.92	2.3929	15 7 11.6	8.478	8	21 58 30.02	2.2528	6 52 42.2	11.664
9	20 9 33.40	2.3897	14 58 40.0	8.573	9	22 0 45.12	2.2505	6 41 1.2	11.701
10	20 11 56.68	2.3865	14 50 2.9	8.666	10	22 3 0.08	2.2482	6 29 18.2	11.736
11	20 14 19.78	2.3834	14 41 20.2	8.758	11	22 5 14.91	2.2460	6 17 33.1	11.769
12	20 16 42.70	2.3804	14 32 32.0	8.849	12	22 7 29.60	2.2439	6 5 45.8	11.801
13	20 19 5.44	2.3774	14 23 38.5	8.938	13	22 9 44.17	2.2418	5 53 56.8	11.833
14	20 21 27.99	2.3742	14 14 39.6	9.026	14	22 11 58.62	2.2397	5 42 5.9	11.863
15	20 23 50.36	2.3709	14 5 35.4	9.113	15	22 14 12.95	2.2376	5 30 13.2	11.892
16	20 26 12.52	2.3677	13 56 26.2	9.198	16	22 16 27.15	2.2356	5 18 18.8	11.921
17	20 28 34.49	2.3645	13 47 11.8	9.283	17	22 18 41.23	2.2337	5 6 22.8	11.948
18	20 30 56.26	2.3613	13 37 52.3	9.367	18	22 20 55.20	2.2318	4 54 25.1	11.974
19	20 33 17.85	2.3582	13 28 27.8	9.450	19	22 23 9.06	2.2300	4 42 26.0	11.998
20	20 35 39.25	2.3550	13 18 58.4	9.532	20	22 25 22.81	2.2282	4 30 25.5	12.022
21	20 38 0.45	2.3518	13 9 24.1	9.613	21	22 27 36.45	2.2265	4 18 23.5	12.045
22	20 40 21.46	2.3487	12 59 44.9	9.694	22	22 29 49.99	2.2248	4 6 20.2	12.066
23	20 42 42.29	2.3456	S. 12 50 1.0	9.773	23	22 32 3.43	2.2232	S. 3 54 15.7	12.085
	THURSDAY 26.					SATURDAY 28.			
0	20 45 2.93	2.3425	S. 12 40 12.3	9.850	0	22 34 16.77	2.2216	S. 3 42 10.0	12.103
1	20 47 23.39	2.3394	12 30 19.1	9.924	1	22 36 30.02	2.2201	3 30 3.3	12.120
2	20 49 43.66	2.3362	12 20 21.5	9.998	2	22 38 43.18	2.2186	3 17 55.7	12.135
3	20 52 3.74	2.3331	12 10 19.4	10.071	3	22 40 56.25	2.2171	3 5 47.2	12.149
4	20 54 23.62	2.3300	12 0 13.0	10.143	4	22 43 9.22	2.2156	2 53 37.9	12.163
5	20 56 43.32	2.3269	11 50 2.3	10.214	5	22 45 22.12	2.2142	2 41 27.8	12.175
6	20 59 2.85	2.3238	11 39 47.4	10.284	6	22 47 34.94	2.2129	2 29 16.9	12.186
7	21 1 22.19	2.3207	11 29 28.4	10.352	7	22 49 47.67	2.2116	2 17 5.4	12.197
8	21 3 41.34	2.3176	11 19 5.3	10.419	8	22 52 0.33	2.2104	2 4 53.4	12.206
9	21 6 0.31	2.3146	11 8 38.2	10.485	9	22 54 12.93	2.2092	1 52 40.8	12.214
10	21 8 19.09	2.3116	10 58 7.2	10.550	10	22 56 25.45	2.2081	1 40 27.8	12.221
11	21 10 37.70	2.3086	10 47 32.3	10.614	11	22 58 37,91	2.2071	1 28 14.5	12.226
12	21 12 56.13	2.3057	10 36 53.6	10.677	12	23 0 50.30	2.2061	1 16 0.9	12.229
13	21 15 14.38	2.3028	10 26 11.3	10.736	13	23 3 2.64	2.2051	1 3 47.2	12.230
14	21 17 32.46	2.2999	10 15 25.4	10.795	14	23 5 14.92	2.2042	0 51 33.4	12.232
15	21 19 50.37	2.2970	10 4 35.8	10.854	15	23 7 27.15	2.2033	0 39 19.4	12.233
16	21 22 8.10	2.2941	9 53 42.8	10.912	16	23 9 39.32	2.2025	0 27 5.5	12.233
17	21 24 25.66	2.2913	9 42 46.5	10.968	17	23 11 51.45	2.2017	0 14 51.6	12.231
18	21 26 43.06	2.2885	9 31 46.8	11.023	18	23 14 3.54	2.2010	S. 0 2 37.8	12.228
19	21 29 0.29	2.2858	9 20 43.8	11.077	19	23 16 15.57	2.2003	N. 0 9 35.7	12.226
20	21 31 17.36	2.2830	9 9 37.7	11.129	20	23 18 27.57	2.1997	0 21 49.0	12.219
21	21 33 34.26	2.2803	8 58 28.4	11.180	21	23 20 39.55	2.1991	0 34 2.0	12.212
22	21 35 51.00	2.2776	8 47 16.1	11.230	22	23 22 51.49	2.1986	0 46 14.5	12.205
23	21 38 7.58	2.2750	8 36 0.8	11.278	23	23 25 3.40	2.1982	0 58 26.5	12.196
24	21 40 24.01	2.2725	S. 8 24 42.6	11.325	24	23 27 15.27	2.1978	N. 1 10 38.0	12.186

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 27 15.27	2.1978	N. 1 10 38.0	12.186
1	23 29 27.13	2.1975	1 22 48.7	12.174
2	23 31 38.97	2.1972	1 34 58.7	12.162
3	23 33 50.80	2.1969	1 47 8.1	12.149
4	23 36 2.61	2.1966	1 59 16.6	12.135
5	23 38 14.40	2.1964	2 11 24.2	12.120
6	23 40 26.18	2.1962	2 23 30.9	12.104
7	23 42 37.95	2.1960	2 35 36.5	12.086
8	23 44 49.71	2.1960	2 47 41.0	12.067
9	23 47 1.47	2.1960	2 59 44.5	12.047
10	23 49 13.24	2.1961	3 11 46.6	12.026
11	23 51 25.01	2.1962	3 23 47.4	12.003
12	23 53 36.78	2.1964	3 35 47.0	11.979
13	23 55 48.57	2.1966	3 47 45.0	11.954
14	23 58 0.38	2.1968	3 59 41.4	11.928
15	0 0 12.20	2.1971	4 11 36.3	11.901
16	0 2 24.04	2.1974	4 23 29.5	11.873
17	0 4 35.90	2.1978	4 35 21.0	11.844
18	0 6 47.77	2.1982	4 47 10.7	11.814
19	0 8 59.68	2.1986	4 58 58.6	11.784
20	0 11 11.61	2.1991	5 10 44.6	11.752
21	0 13 23.56	2.1996	5 22 28.8	11.719
22	0 15 35.55	2.2001	5 34 10.8	11.684
23	0 17 47.58	2.2007	N. 5 45 50.7	11.648

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 19 59.65	2.2014	N. 5 57 28.5	11.611
1	0 22 11.76	2.2022	6 9 3.9	11.572
2	0 24 23.92	2.2029	6 20 37.0	11.533
3	0 26 36.12	2.2037	6 32 7.9	11.493
4	0 28 48.37	2.2045	6 43 36.3	11.453
5	0 31 0.67	2.2053	6 55 2.2	11.411
6	0 33 13.01	2.2062	7 6 25.5	11.368
7	0 35 25.41	2.2071	7 17 46.2	11.323
8	0 37 37.87	2.2081	7 29 4.2	11.278
9	0 39 50.38	2.2091	7 40 19.5	11.232
10	0 42 2.96	2.2102	7 51 31.9	11.184
11	0 44 15.60	2.2112	8 2 41.4	11.135
12	0 46 28.31	2.2123	8 13 48.1	11.085
13	0 48 41.08	2.2134	8 24 51.6	11.035
14	0 50 53.92	2.2145	8 35 52.1	10.983
15	0 53 6.82	2.2156	8 46 49.5	10.929
16	0 55 19.79	2.2168	8 57 43.6	10.875
17	0 57 32.84	2.2181	9 8 34.4	10.821
18	0 59 45.96	2.2194	9 19 22.0	10.766
19	1 1 59.16	2.2207	9 30 6.2	10.709
20	1 4 12.44	2.2220	9 40 47.0	10.651
21	1 6 25.80	2.2233	9 51 24.4	10.592
22	1 8 39.24	2.2246	10 1 58.2	10.533
23	1 10 52.76	2.2259	10 12 28.3	10.472
24	1 13 6.36	2.2272	N.10 22 54.8	10.410

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 13 6.36	2.2272	N.10 22 54.8	10.410
1	1 15 20.04	2.2287	10 33 17.4	10.346
2	1 17 33.81	2.2302	10 43 36.2	10.282
3	1 19 47.67	2.2317	10 53 51.2	10.217
4	1 22 1.62	2.2332	11 4 2.2	10.152
5	1 24 15.66	2.2347	11 14 9.3	10.086
6	1 26 29.78	2.2362	11 24 12.4	10.019
7	1 28 44.00	2.2377	11 34 11.4	9.950
8	1 30 58.31	2.2392	11 44 6.3	9.881
9	1 33 12.70	2.2408	11 53 57.0	9.811
10	1 35 27.19	2.2424	12 3 43.4	9.739
11	1 37 41.78	2.2439	12 13 25.5	9.665
12	1 39 56.47	2.2455	12 23 3.2	9.590
13	1 42 11.25	2.2471	12 32 36.3	9.515
14	1 44 26.12	2.2487	12 42 4.9	9.440
15	1 46 41.09	2.2503	12 51 29.0	9.364
16	1 48 56.16	2.2519	13 0 48.5	9.287
17	1 51 11.32	2.2535	13 10 3.4	9.209
18	1 53 26.57	2.2551	13 19 13.6	9.130
19	1 55 41.92	2.2567	13 28 19.0	9.051
20	1 57 57.37	2.2583	13 37 19.6	8.970
21	2 0 12.92	2.2599	13 46 15.5	8.888
22	2 2 28.57	2.2616	13 55 6.3	8.806
23	2 4 44.31	2.2632	N.14 3 52.1	8.722

WEDNESDAY, JUNE 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 7 0.15	2.2648	N.14 12 33.0	8.637

PHASES OF THE MOON.

	d	h	m
● New Moon, . .	5	12	14.0
☽ First Quarter, . .	13	6	20.2
○ Full Moon, . . .	21	1	24.0
☾ Last Quarter, . .	27	21	21.1

	d	h
☾ Apogee, ...	13	9.2
☾ Perigee, ...	26	0.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Antares	W.	94° 34′ 25″	2275	96° 21′ 1″	2275	98° 7′ 37″	2275	99° 54′ 13″	2276
	a Aquilæ	W.	46 47 19	3056	48 16 20	3014	49 46 16	2974	51 17 1	2939
	Sun	E.	59 21 24	2553	57 41 24	2552	56 1 23	2552	54 21 22	2552
2	*a* Aquilæ	W.	59 0 34	2811	60 34 48	2793	62 9 25	2779	63 44 21	2765
	Fomalhaut	W.	34 51 4	4150	36 0 18	3988	37 12 9	3852	38 26 18	3732
	Sun	E.	46 1 26	2557	44 21 32	2559	42 41 41	2561	41 1 53	2564
3	*a* Aquilæ	W.	71 42 38	2724	73 18 46	2721	74 54 58	2718	76 31 14	2717
	Fomalhaut	W.	45 4 17	3319	46 28 7	3264	47 53 1	3214	49 18 53	3172
	Mars	W.	29 14 14	2627	30 52 32	2621	32 30 58	2618	34 9 29	2616
	Sun	E.	32 43 56	2583	31 4 38	2588	29 25 26	2593	27 46 21	2599
7	Sun	W.	18 37 35	2920	20 9 29	2935	21 41 4	2949	23 12 21	2965
	Pollux	E.	46 17 45	2764	44 42 30	2788	43 7 46	2813	41 33 35	2840
	Regulus	E.	82 15 47	2612	80 37 9	2626	78 58 50	2641	77 20 51	2655
8	Sun	W.	30 43 58	3040	32 13 21	3055	33 42 26	3070	35 11 12	3086
	Pollux	E.	33 52 8	3005	32 22 2	3047	30 52 48	3095	29 24 32	3147
	Regulus	E.	69 15 44	2728	67 39 41	2742	66 3 57	2756	64 28 32	2771
	Saturn	E.	113 42 13	2711	112 5 48	2725	110 29 41	2738	108 53 51	2751
9	Sun	W.	42 30 31	3158	43 57 30	3173	45 24 12	3186	46 50 38	3200
	Regulus	E.	56 36 13	2844	55 2 42	2858	53 29 29	2872	51 56 34	2887
	Saturn	E.	100 59 1	2817	99 24 55	2830	97 51 6	2842	96 17 33	2855
	Spica	E.	110 18 30	2813	108 44 19	2825	107 10 24	2838	105 36 46	2851
10	Sun	W.	53 58 47	3265	55 23 40	3277	56 48 18	3288	58 12 43	3300
	Regulus	E.	44 16 30	2956	42 45 22	2969	41 14 31	2984	39 43 58	2997
	Saturn	E.	88 33 46	2915	87 1 46	2926	85 30 0	2936	83 58 27	2947
	Spica	E.	97 52 34	2911	96 20 29	2922	94 48 38	2933	93 17 1	2943
11	Sun	W.	65 11 39	3351	66 34 52	3360	67 57 54	3368	69 20 47	3376
	Regulus	E.	32 15 32	3069	30 46 45	3085	29 18 17	3101	27 50 8	3118
	Saturn	E.	76 23 57	2995	74 53 38	3004	73 23 30	3013	71 53 33	3021
	Spica	E.	85 42 3	2990	84 11 38	2998	82 41 23	3006	81 11 18	3014
12	Sun	W.	76 13 5	3409	77 35 11	3415	78 57 11	3419	80 19 6	3423
	Pollux	W.	20 31 53	3816	21 46 39	3725	23 3 0	3650	24 20 40	3590
	Saturn	E.	64 26 3	3054	62 56 57	3059	61 27 57	3065	59 59 4	3069
	Spica	E.	73 43 0	3041	72 13 42	3048	70 44 29	3053	69 15 22	3057
	Jupiter	E.	104 44 59	2998	103 14 44	3003	101 44 35	3007	100 14 31	3011
13	Sun	W.	87 7 41	3437	88 29 16	3438	89 50 50	3438	91 12 24	3436
	Pollux	W.	31 2 32	3398	32 24 51	3373	33 47 38	3351	35 10 51	3332
	Saturn	E.	52 35 58	3087	51 7 33	3090	49 39 11	3092	48 10 52	3094
	Spica	E.	61 50 47	3069	60 22 0	3070	58 53 14	3070	57 24 28	3070
	Jupiter	E.	92 45 12	3023	91 15 28	3025	89 45 45	3025	88 16 3	3024
	Antares	E.	107 15 23	3097	105 47 10	3098	104 18 58	3096	102 50 46	3093
14	Sun	W.	98 0 27	3430	99 22 10	3426	100 43 57	3423	102 5 48	3416
	Pollux	W.	42 12 3	3253	43 37 9	3240	45 2 31	3227	46 28 8	3215
	Saturn	E.	40 49 44	3100	39 21 34	3101	37 53 25	3101	36 25 17	3101
	Spica	E.	50 0 27	3063	48 31 32	3060	47 2 33	3056	45 33 30	3052
	Jupiter	E.	80 47 17	3017	79 17 25	3014	77 47 29	3010	76 17 29	3007

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Antares	W.	101° 40′ 48″	2277	103° 27′ 22″	2277	105° 13′ 55″	2279	107° 0′ 26″	2280
	α Aquilæ	W.	52 48 31	2907	54 20 41	2879	55 53 27	2853	57 26 46	2831
	Sun	E.	52 41 21	2552	51 1 20	2553	49 21 20	2554	47 41 22	2556
2	α Aquilæ	W.	65 19 35	2753	66 55 4	2744	68 30 45	2736	70 6 37	2729
	Fomalhaut	W.	39 42 31	3626	41 0 37	3535	42 20 23	3453	43 41 40	3382
	Sun	E.	39 22 8	2567	37 42 28	2570	36 2 52	2574	34 23 21	2578
3	α Aquilæ	W.	78 7 31	2718	79 43 47	2719	81 20 2	2722	82 56 13	2725
	Fomalhaut	W.	50 45 36	3133	52 13 5	3101	53 41 14	3071	55 9 59	3047
	Mars	W.	35 48 2	2615	37 26 36	2616	39 5 9	2618	40 43 39	2621
	Sun	E.	26 7 25	2605	24 28 37	2612	22 49 58	2618	21 11 28	2626
7	Sun	W.	24 43 18	2980	26 13 56	2996	27 44 15	3009	29 14 16	3025
	Pollux	E.	39 59 59	2869	38 27 0	2899	36 54 40	2932	35 23 2	2967
	Regulus	E.	75 43 11	2669	74 5 50	2684	72 28 49	2698	70 52 7	2713
8	Sun	W.	36 39 40	3100	38 7 50	3115	39 35 41	3129	41 3 15	3144
	Pollux	E.	27 57 19	3204	26 31 15	3270	25 6 29	3347	23 43 12	3434
	Regulus	E.	62 53 26	2785	61 18 39	2801	59 44 12	2815	58 10 3	2829
	Saturn	E.	107 18 19	2764	105 43 4	2777	104 8 6	2790	102 33 25	2803
9	Sun	W.	48 16 47	3214	49 42 40	3226	51 8 18	3240	52 33 40	3253
	Regulus	E.	50 23 58	2900	48 51 39	2914	47 19 38	2928	45 47 55	2942
	Saturn	E.	94 44 16	2867	93 11 15	2880	91 38 30	2892	90 6 1	2903
	Spica	E.	104 3 24	2863	102 30 18	2876	100 57 28	2888	99 24 54	2899
10	Sun	W.	59 36 55	3311	61 0 54	3321	62 24 41	3332	63 48 16	3342
	Regulus	E.	38 13 42	3011	36 43 43	3026	35 14 2	3039	33 44 38	3054
	Saturn	E.	82 27 8	2958	80 56 2	2967	79 25 8	2977	77 54 27	2986
	Spica	E.	91 45 37	2954	90 14 26	2963	88 43 27	2972	87 12 39	2981
11	Sun	W.	70 43 31	3384	72 6 6	3391	73 28 33	3398	74 50 52	3403
	Regulus	E.	26 22 20	3137	24 54 55	3158	23 27 55	3180	22 1 22	3205
	Saturn	E.	70 23 46	3028	68 54 8	3034	67 24 38	3042	65 55 17	3047
	Spica	E.	79 41 22	3021	78 11 35	3027	76 41 56	3033	75 12 24	3039
12	Sun	W.	81 40 56	3427	83 2 42	3431	84 24 24	3432	85 46 4	3435
	Pollux	W.	25 39 25	3540	26 59 5	3496	28 19 34	3458	29 40 45	3426
	Saturn	E.	58 30 17	3073	57 1 35	3078	55 32 58	3082	54 4 26	3085
	Spica	E.	67 46 20	3060	66 17 22	3064	64 48 28	3065	63 19 36	3068
	Jupiter	E.	98 44 32	3014	97 14 37	3018	95 44 46	3020	94 14 58	3022
13	Sun	W.	92 33 58	3437	93 55 33	3436	95 17 9	3434	96 38 47	3432
	Pollux	W.	36 34 26	3313	37 58 22	3296	39 22 38	3281	40 47 12	3266
	Saturn	E.	46 42 35	3096	45 14 20	3097	43 46 7	3098	42 17 55	3099
	Spica	E.	55 55 42	3070	54 26 56	3069	52 58 8	3068	51 29 19	3065
	Jupiter	E.	86 46 20	3024	85 16 37	3022	83 46 52	3022	82 17 6	3019
	Antares	E.	101 22 34	3097	99 54 21	3096	98 26 6	3094	96 57 49	3091
14	Sun	W.	103 27 44	3413	104 49 46	3408	106 11 53	3402	107 34 7	3396
	Pollux	W.	47 53 59	3203	49 20 5	3192	50 46 24	3180	52 12 57	3168
	Saturn	E.	34 57 9	3102	33 29 2	3104	32 0 57	3106	30 32 54	3108
	Spica	E.	44 4 22	3048	42 35 9	3043	41 5 50	3038	39 36 24	3032
	Jupiter	E.	74 47 25	3002	73 17 15	2997	71 46 59	2993	70 16 37	2987

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
14	Antares	E.	95° 29′ 29″	3089	94° 1′ 6″	3087	92° 32′ 40″	3082	91° 4′ 9″	3078
15	Sun	W.	108 56 28	3389	110 18 57	3382	111 41 34	3375	113 4 19	3366
	Pollux	W.	53 39 44	3156	55 6 44	3147	56 33 57	3135	58 1 24	3124
	Regulus	W.	16 44 31	3276	18 9 11	3233	19 34 41	3197	21 0 54	3165
	Spica	E.	38 6 51	3026	36 37 10	3019	35 7 21	3013	33 37 24	3005
	Jupiter	E.	68 46 8	2981	67 15 31	2974	65 44 46	2967	64 13 52	2960
	Antares	E.	83 40 11	3052	82 11 3	3047	80 41 48	3039	79 12 24	3032
16	Sun	W.	120 0 35	3319	121 24 24	3309	122 48 25	3299	124 12 38	3288
	Pollux	W.	65 22 8	3065	66 51 1	3053	68 20 8	3041	69 49 30	3029
	Regulus	W.	28 20 1	3054	29 49 7	3035	31 18 36	3018	32 48 26	3002
	Spica	E.	26 5 11	2962	24 34 11	2952	23 2 58	2942	21 31 33	2932
	Jupiter	E.	56 36 55	2918	55 4 59	2908	53 32 50	2898	52 0 29	2887
	Antares	E.	71 43 3	2991	70 12 39	2982	68 42 4	2973	67 11 17	2963
17	Pollux	W.	77 20 11	2965	78 51 7	2953	80 22 19	2939	81 53 48	2926
	Regulus	W.	40 22 33	2925	41 54 20	2910	43 26 26	2895	44 58 51	2880
	Jupiter	E.	44 15 16	2832	42 41 30	2821	41 7 29	2808	39 33 12	2797
	Antares	E.	59 34 13	2912	58 2 9	2901	56 29 51	2890	54 57 19	2879
	α Aquilæ	E.	110 33 41	3337	109 10 12	3316	107 46 19	3296	106 22 3	3276
18	Pollux	W.	89 35 24	2860	91 8 34	2846	92 42 2	2833	94 15 47	2821
	Regulus	W.	52 45 40	2807	54 19 59	2792	55 54 37	2778	57 29 34	2763
	Jupiter	E.	31 37 45	2733	30 1 49	2720	28 25 36	2707	26 49 5	2693
	Antares	E.	47 11 8	2826	45 37 12	2814	44 3 2	2803	42 28 38	2793
	α Aquilæ	E.	99 15 11	3187	97 48 46	3170	96 22 1	3154	94 54 57	3138
19	Regulus	W.	65 29 8	2690	67 6 1	2676	68 43 13	2662	70 20 44	2648
	Saturn	W.	21 57 14	2807	23 31 33	2774	25 6 35	2744	26 42 16	2718
	Spica	W.	11 28 11	2666	13 5 36	2652	14 43 20	2639	16 21 22	2625
	Antares	E.	34 33 34	2751	32 58 2	2745	31 22 22	2741	29 46 37	2738
	α Aquilæ	E.	87 35 8	3069	86 6 21	3057	84 37 19	3046	83 8 3	3034
20	Regulus	W.	78 33 0	2580	80 12 23	2566	81 52 4	2554	83 32 2	2541
	Saturn	W.	34 48 38	2612	36 27 17	2594	38 6 20	2577	39 45 47	2561
	Spica	W.	24 36 11	2558	26 16 4	2545	27 56 14	2533	29 36 42	2520
	α Aquilæ	E.	75 38 41	2993	74 8 20	2988	72 37 52	2983	71 7 18	2980
	Fomalhaut	E.	104 19 40	3060	102 50 42	3042	101 21 21	3023	99 51 37	3005
21	Saturn	W.	48 8 23	2487	49 49 54	2475	51 31 43	2462	53 13 49	2450
	Spica	W.	38 3 19	2460	39 45 28	2449	41 27 53	2438	43 10 34	2428
	α Aquilæ	E.	63 33 59	2983	62 3 25	2989	60 32 58	2996	59 2 40	3006
	Fomalhaut	E.	92 17 53	2932	90 46 15	2921	89 14 23	2911	87 42 18	2901
	α Pegasi	E.	110 2 30	2629	108 24 15	2615	106 45 40	2601	105 6 46	2568
22	Saturn	W.	61 48 26	2396	63 32 6	2387	65 16 0	2378	67 0 7	2369
	Spica	W.	51 47 33	2379	53 31 38	2371	55 15 55	2362	57 0 25	2354
	Jupiter	W.	22 1 56	2344	23 46 51	2335	25 32 0	2326	27 17 21	2317
	α Aquilæ	E.	51 35 23	3097	50 7 10	3127	48 39 33	3160	47 12 36	3198
	Fomalhaut	E.	79 59 17	2870	78 26 20	2868	76 53 20	2866	75 20 18	2866
	α Pegasi	E.	96 48 2	2531	95 7 32	2521	93 26 48	2512	91 45 51	2504
	Mars	E.	102 29 29	2643	100 51 33	2634	99 13 24	2624	97 35 2	2615
23	Saturn	W.	75 43 41	2331	77 28 56	2324	79 14 20	2319	80 59 52	2313

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	Antares	E.	89° 35′ 33″	3073	88° 6′ 51″	3069	86° 38′ 4″	3065	85° 9′ 11″	3059
15	Sun	W.	114 27 14	3358	115 50 19	3349	117 13 34	3340	118 36 59	3331
	Pollux	W.	59 29 4	3118	60 56 58	3101	62 25 7	3089	63 53 30	3077
	Regulus	W.	22 27 45	3136	23 55 8	3114	25 23 0	3093	26 51 18	3073
	Spica	E.	32 7 18	2997	30 37 2	2989	29 6 36	2981	27 35 59	2972
	Jupiter	E.	62 42 49	2952	61 11 36	2944	59 40 13	2936	58 8 40	2927
	Antares	E.	77 42 51	3025	76 13 9	3018	74 43 18	3009	73 13 16	3000
16	Sun	W.	125 37 4	3276	127 1 44	3264	128 26 38	3252	129 51 46	3240
	Pollux	W.	71 19 7	3017	72 48 59	3004	74 19 7	2991	75 49 31	2978
	Regulus	W.	34 18 36	2985	35 49 6	2970	37 19 56	2955	38 51 5	2940
	Spica	E.	19 59 55	2922	18 28 4	2911	16 55 59	2900	15 23 40	2887
	Jupiter	E.	50 27 54	2877	48 55 6	2866	47 22 4	2855	45 48 47	2844
	Antares	E.	65 40 18	2953	64 9 6	2942	62 37 41	2933	61 6 4	2922
17	Pollux	W.	83 25 34	2913	84 57 36	2900	86 29 55	2887	88 2 31	2873
	Regulus	W.	46 31 35	2866	48 4 38	2852	49 37 59	2836	51 11 40	2821
	Jupiter	E.	37 58 40	2784	36 23 51	2772	34 48 46	2759	33 13 24	2746
	Antares	E.	53 24 33	2868	51 51 33	2857	50 18 19	2846	48 44 50	2835
	α Aquilæ	E.	104 57 24	3256	103 32 23	3239	102 7 0	3221	100 41 16	3204
18	Pollux	W.	95 49 48	2808	97 24 6	2794	98 58 42	2781	100 33 35	2769
	Regulus	W.	59 4 50	2748	60 40 26	2734	62 16 21	2719	63 52 35	2705
	Jupiter	E.	25 12 16	2681	23 35 10	2667	21 57 46	2655	20 20 5	2641
	Antares	E.	40 54 1	2783	39 19 11	2775	37 44 10	2766	36 8 57	2758
	α Aquilæ	E.	93 27 34	3124	91 59 53	3109	90 31 54	3096	89 3 39	3082
19	Regulus	W.	71 58 34	2634	73 36 43	2621	75 15 10	2607	76 53 56	2593
	Saturn	W.	28 18 32	2694	29 55 20	2672	31 32 38	2650	33 10 25	2631
	Spica	W.	17 59 43	2611	19 38 23	2598	21 17 21	2585	22 56 37	2572
	Antares	E.	28 10 48	2738	26 34 58	2740	24 59 11	2745	23 23 31	2754
	α Aquilæ	E.	81 38 33	3025	80 8 51	3016	78 38 58	3007	77 8 54	3000
20	Regulus	W.	85 12 18	2528	86 52 52	2517	88 33 42	2504	90 14 49	2493
	Saturn	W.	41 25 36	2545	43 5 47	2530	44 46 19	2515	46 27 11	2501
	Spica	W.	31 17 27	2507	32 58 30	2495	34 39 50	2484	36 21 26	2472
	α Aquilæ	E.	69 36 40	2977	68 5 59	2977	66 35 18	2977	65 4 37	2980
	Fomalhaut	E.	98 21 31	2989	96 51 5	2973	95 20 19	2959	93 49 15	2945
21	Saturn	W.	54 56 13	2438	56 38 53	2427	58 21 49	2417	60 5 0	2406
	Spica	W.	44 53 29	2417	46 36 39	2408	48 20 3	2398	50 3 41	2388
	α Aquilæ	E.	57 32 35	3019	56 2 46	3034	54 33 15	3052	53 4 6	3073
	Fomalhaut	E.	86 10 0	2893	84 37 32	2885	83 4 54	2880	81 32 9	2874
	α Pegasi	E.	103 27 34	2575	101 48 5	2563	100 8 19	2552	98 28 18	2541
22	Saturn	W.	68 44 26	2360	70 28 58	2352	72 13 42	2345	73 58 36	2337
	Spica	W.	58 45 6	2346	60 29 59	2339	62 15 2	2331	64 0 16	2324
	Jupiter	W.	29 2 55	2310	30 48 40	2302	32 34 37	2294	34 20 45	2288
	α Aquilæ	E.	45 46 24	3242	44 21 4	3293	42 56 44	3351	41 33 32	3418
	Fomalhaut	E.	73 47 16	2868	72 14 16	2870	70 41 19	2874	69 8 27	2880
	α Pegasi	E.	90 4 43	2496	88 23 24	2489	86 41 55	2482	85 0 17	2476
	Mars	E.	95 56 28	2607	94 17 42	2599	92 38 45	2591	90 59 38	2583
23	Saturn	W.	82 45 32	2308	84 31 20	2303	86 17 15	2299	88 3 16	2295

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Spica	W.	65° 45′ 40″	2318	67° 31′ 13″	2312	69° 16′ 55″	2306	71° 2′ 46″	2301
	Jupiter	W.	36 7 2	2281	37 53 29	2276	39 40 4	2270	41 26 48	2264
	Antares	W.	21 9 10	2512	22 50 7	2480	24 31 49	2453	26 14 9	2430
	Fomalhaut	E.	67 35 43	2888	66 3 9	2898	64 30 48	2910	62 58 42	2924
	a Pegasi	E.	83 18 30	2471	81 36 36	2465	79 54 35	2462	78 12 28	2459
	Mars	E.	89 20 20	2577	87 40 53	2571	86 1 18	2564	84 21 34	2559
24	Saturn	W.	89 49 23	2291	91 35 35	2288	93 21 52	2285	95 8 14	2282
	Spica	W.	79 53 47	2279	81 40 18	2276	83 26 53	2272	85 13 33	2270
	Jupiter	W.	50 22 17	2243	52 9 41	2239	53 57 10	2236	55 44 44	2234
	Antares	W.	34 52 28	2357	36 37 5	2347	38 21 56	2338	40 7 0	2331
	Fomalhaut	E.	55 23 40	3033	53 54 8	3065	52 25 16	3101	50 57 8	3141
	a Pegasi	E.	69 41 5	2453	67 58 45	2454	66 16 27	2455	64 34 11	2458
	Mars	E.	76 1 8	2536	74 20 45	2533	72 40 18	2530	70 59 47	2527
25	Spica	W.	94 7 45	2260	95 54 43	2259	97 41 42	2258	99 28 44	2258
	Jupiter	W.	64 43 24	2224	66 31 16	2223	68 19 9	2223	70 7 3	2222
	Antares	W.	48 54 37	2305	50 40 29	2302	52 26 26	2299	54 12 27	2297
	a Pegasi	E.	56 4 16	2487	54 22 44	2496	52 41 25	2507	51 0 21	2520
	Mars	E.	62 36 28	2520	60 55 43	2520	59 14 58	2521	57 34 14	2521
	a Arietis	E.	98 48 0	2312	97 2 18	2311	95 16 34	2310	93 30 49	2309
	Sun	E.	128 22 26	2563	126 42 40	2562	125 2 53	2561	123 23 5	2561
26	Jupiter	W.	79 6 37	2223	80 54 30	2225	82 42 21	2225	84 30 11	2227
	Antares	W.	63 3 7	2291	64 49 19	2291	66 35 31	2292	68 21 42	2293
	a Pegasi	E.	42 40 15	2613	41 1 38	2640	39 23 37	2671	37 46 18	2707
	Mars	E.	49 10 53	2530	47 30 21	2533	45 49 54	2536	44 9 31	2540
	a Arietis	E.	84 41 59	2311	82 56 15	2313	81 10 34	2314	79 24 55	2315
	Sun	E.	115 3 59	2562	113 24 12	2563	111 44 26	2564	110 4 42	2565
27	Jupiter	W.	93 28 42	2236	95 16 16	2239	97 3 46	2241	98 51 12	2243
	Antares	W.	77 12 18	2299	78 58 19	2301	80 44 17	2303	82 30 12	2306
	a Aquilæ	W.	33 31 50	3961	34 44 18	3807	35 59 13	3680	37 16 21	3571
	Mars	E.	35 49 15	2569	34 9 37	2577	32 30 11	2567	30 50 58	2598
	a Arietis	E.	70 37 30	2330	68 52 14	2334	67 7 4	2337	65 21 59	2342
	Sun	E.	101 46 34	2575	100 7 5	2578	98 27 40	2581	96 48 19	2583
28	Antares	W.	91 18 45	2321	93 4 14	2325	94 49 37	2328	96 34 55	2332
	a Aquilæ	W.	44 7 30	3200	45 33 39	3150	47 0 48	3105	48 28 51	3066
	a Arietis	E.	56 38 24	2370	54 54 6	2377	53 9 58	2384	51 26 1	2391
	Sun	E.	88 32 34	2600	86 53 39	2604	85 14 50	2608	83 36 6	2612
29	*a* Aquilæ	W.	55 59 30	2928	57 31 13	2909	59 3 20	2893	60 35 48	2879
	a Arietis	E.	42 49 20	2441	41 6 44	2455	39 24 27	2469	37 42 30	2485
	Sun	E.	75 23 50	2634	73 45 41	2639	72 7 39	2643	70 29 43	2649
30	*a* Aquilæ	W.	68 21 57	2832	69 55 43	2828	71 29 35	2824	73 3 32	2821
	Fomalhaut	W.	42 11 35	3555	43 30 59	3485	44 51 40	3423	46 13 30	3370
	Sun	E.	62 21 50	2676	60 44 38	2682	59 7 34	2688	57 30 38	2694
31	*a* Aquilæ	W.	80 53 43	2823	82 27 41	2826	84 1 35	2829	85 35 25	2835
	Fomalhaut	W.	53 16 2	3179	54 42 36	3153	56 9 41	3130	57 37 14	3110
	a Pegasi	W.	33 12 8	2935	34 43 43	2897	36 16 6	2866	37 49 9	2839
	Mars	W.	18 36 40	2846	20 10 8	2826	21 44 2	2810	23 18 17	2798
	Sun	E.	49 28 4	2727	47 52 0	2735	46 16 6	2741	44 40 21	2749

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Spica	W.	72° 48′ 44″	2296	74° 34′ 50″	2291	76° 21′ 3″	2287	78° 7′ 22″	2283
	Jupiter	W.	43 13 40	2260	45 0 39	2255	46 47 45	2250	48 34 58	2246
	Antares	W.	27 57 1	2411	29 40 20	2394	31 24 3	2380	33 8 7	2368
	Fomalhaut	E.	61 26 54	2941	59 55 27	2960	58 24 24	2981	56 53 47	3005
	a Pegasi	E.	76 30 17	2456	74 48 2	2454	73 5 44	2453	71 23 25	2453
	Mars	E.	82 41 42	2553	81 1 43	2549	79 21 38	2544	77 41 26	2540
24	Saturn	W.	96 54 40	2280	98 41 9	2278	100 27 41	2277	102 14 15	2275
	Spica	W.	87 0 17	2267	88 47 5	2265	90 33 56	2264	92 20 49	2262
	Jupiter	W.	57 32 21	2231	59 20 2	2229	61 7 47	2227	62 55 34	2225
	Antares	W.	41 52 14	2324	43 37 38	2318	45 23 11	2313	47 8 51	2309
	Fomalhaut	E.	49 29 48	3186	48 3 22	3237	46 37 57	3295	45 13 40	3360
	a Pegasi	E.	62 51 59	2462	61 9 52	2467	59 27 52	2472	57 45 59	2479
	Mars	E.	69 19 12	2525	67 38 34	2524	65 57 54	2522	64 17 12	2521
25	Spica	W.	101 15 45	2256	103 2 47	2256	104 49 49	2258	106 36 50	2259
	Jupiter	W.	71 54 58	2222	73 42 53	2222	75 30 48	2222	77 18 43	2223
	Antares	W.	55 58 31	2295	57 44 38	2294	59 30 46	2293	61 16 56	2292
	a Pegasi	E.	49 19 35	2533	47 39 8	2550	45 59 4	2568	44 19 25	2589
	Mars	E.	55 53 30	2522	54 12 47	2523	52 32 6	2525	50 51 28	2527
	a Arietis	E.	91 45 3	2309	89 59 16	2309	88 13 30	2309	86 27 44	2310
	Sun	E.	121 43 16	2560	120 3 26	2560	118 23 36	2561	116 43 47	2561
26	Jupiter	W.	86 17 58	2229	88 5 43	2231	89 53 25	2232	91 41 5	2234
	Antares	W.	70 7 52	2294	71 54 1	2294	73 40 9	2296	75 26 15	2298
	a Pegasi	E.	36 9 47	2748	34 34 11	2795	32 59 37	2851	31 26 15	2915
	Mars	E.	42 29 14	2545	40 49 3	2550	39 8 59	2556	37 29 3	2561
	a Arietis	E.	77 39 18	2318	75 53 45	2321	74 8 16	2324	72 22 51	2326
	Sun	E.	108 24 59	2567	106 45 19	2569	105 5 41	2571	103 26 6	2573
27	Jupiter	W.	100 38 35	2247	102 25 53	2249	104 13 7	2253	106 0 16	2256
	Antares	W.	84 16 3	2309	86 1 50	2311	87 47 33	2315	89 33 11	2317
	a Aquilæ	W.	38 35 27	3477	39 56 17	3393	41 18 41	3321	42 42 28	3257
	Mars	E.	29 12 0	2610	27 33 19	2624	25 54 57	2641	24 16 58	2662
	a Arietis	E.	63 37 1	2347	61 52 10	2353	60 7 27	2357	58 22 51	2364
	Sun	E.	95 9 1	2586	93 29 47	2590	91 50 38	2593	90 11 34	2596
28	Antares	W.	98 20 8	2336	100 5 15	2341	101 50 15	2345	103 35 9	2349
	a Aquilæ	W.	49 57 42	3031	51 27 16	3001	52 57 28	2973	54 28 14	2950
	a Arietis	E.	49 42 14	2401	47 58 40	2410	46 15 20	2419	44 32 13	2429
	Sun	E.	81 57 27	2616	80 18 54	2621	78 40 27	2624	77 2 5	2629
29	a Aquilæ	W.	62 8 34	2866	63 41 36	2855	65 14 52	2846	66 48 20	2839
	a Arietis	E.	36 0 55	2502	34 19 44	2522	32 39 1	254[illegible]	30 58 48	2569
	Sun	E.	68 51 54	2654	67 14 12	2659	65 36 37	2665	63 59 10	2670
30	a Aquilæ	W.	74 37 33	2819	76 11 36	2819	77 45 39	2819	79 19 42	2821
	Fomalhaut	W.	47 36 21	3322	49 0 7	3279	50 24 43	3242	51 50 3	3209
	Sun	E.	55 53 50	2700	54 17 10	2707	52 40 39	2713	51 4 17	2720
31	a Aquilæ	W.	87 9 8	2840	88 42 44	2847	90 16 11	2854	91 49 29	2862
	Fomalhaut	W.	59 5 11	3093	60 33 29	3078	62 2 5	3065	63 30 57	3055
	a Pegasi	W.	39 22 46	2817	40 56 52	2798	42 31 22	2783	44 6 12	2771
	Mars	W.	24 52 47	2791	26 27 27	2785	28 2 14	2782	29 37 5	2781
	Sun	E.	43 4 46	2756	41 29 21	2765	39 54 7	2772	38 19 3	2782

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	4 38 27.32	10.239	N.22 7 53.7	19.91	15 48.18	68.44	2 25.41	0.382
Thur.	2	4 42 33.30	10.256	22 15 40.0	18.94	15 48.04	68.49	2 16.02	0.399
Fri.	3	4 46 39.65	10.271	22 23 3.0	17.97	15 47.91	68.54	2 6.23	0.414
Sat.	4	4 50 46.36	10.286	22 30 2.6	16.99	15 47.79	68.59	1 56.10	0.429
Sun.	5	4 54 53.42	10.300	22 36 38.8	16.00	15 47.67	68.63	1 45.63	0.443
Mon.	6	4 59 0.80	10.313	22 42 51.2	15.01	15 47.56	68.67	1 34.84	0.456
Tues.	7	5 3 8.49	10.325	22 48 39.5	14.01	15 47.45	68.71	1 23.73	0.468
Wed.	8	5 7 16.46	10.336	22 54 3.9	13.01	15 47.35	68.75	1 12.35	0.479
Thur.	9	5 11 24.68	10.346	22 59 4.2	12.00	15 47.25	68.79	1 0.73	0.489
Fri.	10	5 15 33.10	10.355	23 3 40.3	10.99	15 47.16	68.82	0 48.89	0.498
Sat.	11	5 19 41.72	10.362	23 7 52.1	9.98	15 47.07	68.85	0 36.85	0.506
Sun.	12	5 23 50.53	10.369	23 11 39.4	8.96	15 46.98	68.88	0 24.62	0.513
Mon.	13	5 27 59.50	10.375	23 15 2.2	7.94	15 46.90	68.91	0 12.25	0.519
Tues.	14	5 32 8.61	10.380	23 18 0.4	6.91	15 46.83	68.93	0 0.26	0.524
Wed.	15	5 36 17.83	10.384	23 20 34.0	5.89	15 46.76	68.95	0 12.88	0.528
Thur.	16	5 40 27.15	10.388	23 22 43.0	4.86	15 46.69	68.96	0 25.60	0.532
Fri.	17	5 44 36.53	10.391	23 24 27.2	3.83	15 46.62	68.97	0 38.39	0.534
Sat.	18	5 48 45.97	10.393	23 25 46.7	2.80	15 46.56	68.98	0 51.23	0.536
Sun.	19	5 52 55.44	10.393	23 26 41.4	1.77	15 46.51	68.98	1 4.12	0.537
Mon.	20	5 57 4.93	10.393	23 27 11.3	0.73	15 46.46	68.98	1 17.03	0.537
Tues.	21	6 1 14.41	10.393	23 27 16.4	0.30	15 46.41	68.98	1 29.90	0.536
Wed.	22	6 5 23.85	10.392	23 26 56.7	1.34	15 46.36	68.97	1 42.76	0.535
Thur.	23	6 9 33.26	10.389	23 26 12.1	2.37	15 46.31	68.96	1 55.57	0.533
Fri.	24	6 13 42.60	10.386	23 25 2.7	3.40	15 46.27	68.95	2 8.33	0.530
Sat.	25	6 17 51.87	10.382	23 23 28.7	4.43	15 46.23	68.93	2 21.00	0.526
Sun.	26	6 22 1.02	10.377	23 21 29.9	5.46	15 46.20	68.91	2 33.56	0.521
Mon.	27	6 26 10.03	10.371	23 19 6.3	6.49	15 46.17	68.89	2 45.97	0.515
Tues.	28	6 30 18.88	10.364	23 16 18.2	7.51	15 46.14	68.86	2 58.23	0.508
Wed.	29	6 34 27.56	10.356	23 13 5.7	8.53	15 46.12	68.83	3 10.34	0.500
Thur.	30	6 38 36.06	10.347	23 9 28.8	9.54	15 46.11	68.80	3 22.24	0.491
Fri.	31	6 42 44.32	10.337	N.23 5 27.5	10.55	15 46.10	68.76	3 33.91	0.480

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to* / *subtracted from* *Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	s	m s	s	h m s
Wed.	1	4 38 27.72	10.239	N.22 7 54.5	19.91	2 25.39	0.382	4 40 53.11
Thur.	2	4 42 33.67	10.256	22 15 40.7	18.94	2 16.00	0.399	4 44 49.67
Fri.	3	4 46 40.00	10.271	22 23 3.6	17.97	2 6.22	0.414	4 48 46.22
Sat.	4	4 50 46.69	10.286	22 30 3.1	16.99	1 56.09	0.429	4 52 42.78
Sun.	5	4 54 53.72	10.301	22 36 39.2	16.00	1 45.62	0.443	4 56 39.34
Mon.	6	4 59 1.07	10.313	22 42 51.5	15.01	1 34.83	0.456	5 0 35.90
Tues.	7	5 3 8.73	10.325	22 48 39.8	14.01	1 23.72	0.468	5 4 32.45
Wed.	8	5 7 16.67	10.336	22 54 4.1	13.01	1 12.34	0.479	5 8 29.01
Thur.	9	5 11 24.85	10.346	22 59 4.4	12.00	1 0.72	0.489	5 12 25.57
Fri.	10	5 15 33.24	10.355	23 3 40.4	10.99	0 48.88	0.498	5 16 22.12
Sat.	11	5 19 41.83	10.362	23 7 52.1	9.98	0 36.85	0.506	5 20 18.68
Sun.	12	5 23 50.61	10.369	23 11 39.4	8.96	0 24.62	0.513	5 24 15.23
Mon.	13	5 27 59.54	10.375	23 15 2.2	7.94	0 12.25	0.519	5 28 11.79
Tues.	14	5 32 8.61	10.380	23 18 0.4	6.91	0 0.26	0.524	5 32 8.35
Wed.	15	5 36 17.79	10.384	23 20 34.0	5.89	0 12.88	0.528	5 36 4.91
Thur.	16	5 40 27.07	10.388	23 22 43.0	4.86	0 25.60	0.532	5 40 1.47
Fri.	17	5 44 36.41	10.391	23 24 27.2	3.83	0 38.39	0.534	5 43 58.02
Sat.	18	5 48 45.81	10.393	23 25 46.7	2.80	0 51.23	0.536	5 47 54.58
Sun.	19	5 52 55.25	10.393	23 26 41.4	1.77	1 4.11	0.537	5 51 51.14
Mon.	20	5 57 4.71	10.393	23 27 11.3	0.73	1 17.02	0.537	5 55 47.69
Tues.	21	6 1 14.14	10.393	23 27 16.4	0.30	1 29.89	0.536	5 59 44.25
Wed.	22	6 5 23.54	10.392	23 26 56.7	1.34	1 42.73	0.535	6 3 40.81
Thur.	23	6 9 32.92	10.389	23 26 12.2	2.37	1 55.56	0.533	6 7 37.36
Fri.	24	6 13 42.23	10.386	23 25 2.9	3.40	2 8.31	0.530	6 11 33.92
Sat.	25	6 17 51.46	10.382	23 23 28.9	4.43	2 20.98	0.526	6 15 30.48
Sun.	26	6 22 0.57	10.377	23 21 30.1	5.46	2 33.54	0.521	6 19 27.03
Mon.	27	6 26 9.54	10.371	23 19 6.6	6.49	2 45.95	0.515	6 23 23.59
Tues.	28	6 30 18.36	10.364	23 16 18.6	7.51	2 58.21	0.508	6 27 20.15
Wed.	29	6 34 27.01	10.356	23 13 6.2	8.53	3 10.31	0.500	6 31 16.70
Thur.	30	6 38 35.47	10.347	23 9 29.4	9.54	3 22.21	0.491	6 35 13.26
Fri.	31	6 42 43.70	10.337	N.23 5 28.2	10.55	3 33.88	0.480	6 39 9.82

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ	THE SUN'S True LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	153	71 10 55.2	10 22.3	143.66	—0.17	0.0062842	26.2	19 15 56.99
2	154	72 8 22.6	7 49.5	143.63	0.31	.0063458	25.2	19 12 1.08
3	155	73 5 49.2	5 15.9	143.60	0.45	.0064049	24.2	19 8 5.17
4	156	74 3 15.0	2 41.5	143.56	0.58	.0064616	23.1	19 4 9.26
5	157	75 0 40.0	0 6.4	143.52	0.69	.0065158	22.1	19 0 13.35
6	158	75 58 4.0	57 30.3	143.48	0.79	.0065676	21.1	18 56 17.44
7	159	76 55 27.1	54 53.2	143.45	0.87	.0066170	20.1	18 52 21.53
8	160	77 52 49.3	52 15.2	143.41	0.92	.0066640	19.1	18 48 25.61
9	161	78 50 10.6	49 36.3	143.37	0.93	.0067087	18.2	18 44 29.70
10	162	79 47 30.9	46 56.5	143.33	0.91	.0067511	17.3	18 40 33.79
11	163	80 44 50.2	44 15.7	143.29	0.87	.0067914	16.4	18 36 37.88
12	164	81 42 8.6	41 33.9	143.25	0.80	.0068297	15.5	18 32 41.97
13	165	82 39 26.1	38 51.2	143.21	0.70	.0068659	14.7	18 28 46.06
14	166	83 36 42.7	36 7.6	143.17	0.58	.0069004	14.0	18 24 50.15
15	167	84 33 58.4	33 23.2	143.14	0.45	.0069332	13.3	18 20 54.24
16	168	85 31 13.3	30 37.9	143.11	0.32	.0069644	12.7	18 16 58.33
17	169	86 28 27.6	27 52.0	143.08	0.19	.0069941	12.1	18 13 2.42
18	170	87 25 41.3	25 5.5	143.06	—0.06	.0070224	11.5	18 9 6.50
19	171	88 22 54.5	22 18.5	143.04	+0.05	.0070493	10.9	18 5 10.59
20	172	89 20 7.3	19 31.2	143.03	0.14	.0070748	10.3	18 1 14.68
21	173	90 17 19.9	16 43.7	143.02	0.21	.0070989	9.7	17 57 18.77
22	174	91 14 32.3	13 55.9	143.01	0.24	.0071215	9.1	17 53 22.86
23	175	92 11 44.4	11 7.8	143.01	0.23	.0071425	8.5	17 49 26.95
24	176	93 8 56.4	8 19.6	143.00	0.19	.0071619	7.8	17 45 31.04
25	177	94 6 8.4	5 31.4	143.00	0.14	.0071796	7.1	17 41 35.13
26	178	95 3 20.4	2 43.2	143.00	+0.07	.0071955	6.3	17 37 39.22
27	179	95 60 32.5	59 55.1	143.00	—0.02	.0072094	5.4	17 33 43.31
28	180	96 57 44.7	57 7.2	143.01	0.14	.0072213	4.5	17 29 47.40
29	181	97 54 57.1	54 19.4	143.02	0.27	.0072308	3.3	17 25 51.49
30	182	98 52 9.6	51 31.7	143.03	0.41	.0072379	2.4	17 21 55.58
31	183	99 49 22.3	48 44.2	143.03	—0.54	0.0072426	1.4	17 17 59.67

Note: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 49.6	15 45.8	57 58.4	–1.10	57 44.7	–1.17	22 13.1	2.21	26.5
2	15 41.9	15 37.8	57 30.2	1.24	57 15.0	1.29	23 6.5	2.22	27.5
3	15 33.5	15 29.0	56 59.2	1.33	56 43.1	1.36	23 59.9	2.21	28.5
4	15 24.6	15 20.1	56 26.6	1.37	56 10.2	1.37			0.0
5	15 15.6	15 11.3	55 53.8	1.35	55 37.9	1.30	0 52.5	2.15	1.0
6	15 7.1	15 3.2	55 22.6	1.24	55 8.2	1.15	1 43.3	2.07	2.0
7	14 59.6	14 56.4	54 54.9	1.05	54 43.0	0.92	2 32.0	1.98	3.0
8	14 53.6	14 51.2	54 32.7	0.78	54 24.2	0.62	3 18.3	1.89	4.0
9	14 49.5	14 48.3	54 17.8	0.44	54 13.5	–0.26	4 2.6	1.81	5.0
10	14 47.8	14 47[illegible]	54 11.6	–0.06	54 12.1	+0.15	4 45.3	1.76	6.0
11	14 48.8	14 50.3	54 15.2	+0.36	54 20.9	0.58	5 27.3	1.75	7.0
12	14 52.6	14 55.5	54 29.1	0.79	54 39.8	0.99	6 9.3	1.77	8.0
13	14 59.1	15 3.3	54 53.0	1.19	55 8.5	1.38	6 52.1	1.82	9.0
14	15 8.1	15 13.5	55 26.2	1.56	55 45.9	1.72	7 36.7	1.91	10.0
15	15 19.3	15 25.5	56 7.4	1.85	56 30.3	1.95	8 23.8	2.03	11.0
16	15 32.0	15 38.7	56 54.2	2.02	57 18.6	2.04	9 14.2	2.17	12.0
17	15 45.4	15 52.0	57 43.2	2.03	58 7.4	1.98	10 8.1	2.31	13.0
18	15 58.4	16 4.3	58 30.7	1.88	58 52.6	1.74	11 5.1	2.41	14.0
19	16 9.7	16 14.5	59 12.5	1.56	59 30.1	1.35	12 4.0	2.47	15.0
20	16 18.6	16 21.9	59 45.0	1.12	59 56.9	0.85	13 3.5	2.46	16.0
21	16 24.2	16 25.6	60 5.5	0.58	60 10.8	+0.30	14 1.9	2.39	17.0
22	16 26.1	16 25.8	60 12.8	+0.04	60 11.6	–0.22	14 58.3	2.30	18.0
23	16 24.7	16 22.8	60 7.4	–0.47	60 0.4	0.69	15 52.5	2.22	19.0
24	16 20.2	16 17.0	59 50.9	0.88	59 39.3	1.03	16 44.8	2.15	20.0
25	16 13.4	16 9.5	59 26.2	1.15	59 11.7	1.24	17 35.9	2.12	21.0
26	16 5.3	16 0.9	58 56.4	1.30	58 40.4	1.35	18 26.5	2.11	22.0
27	15 56.5	15 52.0	58 23.9	1.38	58 7.2	1.39	19 17.4	2.13	23.0
28	15 47.4	15 42.8	57 50.5	1.39	57 33.7	1.39	20 8.9	2.16	24.0
29	15 38.4	15 34.0	57 17.3	1.37	57 1.0	1.34	21 1.1	2.18	25.0
30	15 29.6	15 25.4	56 45.0	1.31	56 29.5	1.28	21 53.6	2.18	26.0
31	15 21.2	15 17.2	56 14.2	–1.26	55 59.3	–1.22	22 45.8	2.16	27.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 1.					FRIDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 7 0.15	2.2648	N.14 12 33.0	8.637	0	3 57 11.94	2.3142	N.19 16 29.9	3.806
1	2 9 16.09	2.2664	14 21 8.7	8.552	1	3 59 30.80	2.3142	19 20 14.9	3.694
2	2 11 32.12	2.2680	14 29 39.2	8.466	2	4 1 49.65	2.3141	19 23 53.2	3.582
3	2 13 48.24	2.2695	14 38 4.6	8.380	3	4 4 8.49	2.3141	19 27 24.7	3.469
4	2 16 4.46	2.2711	14 46 24.8	8.293	4	4 6 27.33	2.3140	19 30 49.4	3.356
5	2 18 20.77	2.2727	14 54 39.7	8.205	5	4 8 46.16	2.3138	19 34 7.4	3.244
6	2 20 37.18	2.2743	15 2 49.3	8.116	6	4 11 4.98	2.3136	19 37 18.6	3.131
7	2 22 53.68	2.2759	15 10 53.5	8.026	7	4 13 23.78	2.3133	19 40 23.0	3.018
8	2 25 10.28	2.2774	15 18 52.3	7.936	8	4 15 42.57	2.3130	19 43 20.7	2.905
9	2 27 26.97	2.2789	15 26 45.7	7.845	9	4 18 1.34	2.3126	19 46 11.6	2.792
10	2 29 43.74	2.2803	15 34 33.6	7.753	10	4 20 20.08	2.3122	19 48 55.7	2.679
11	2 32 0.61	2.2818	15 42 16.0	7.660	11	4 22 38.79	2.3116	19 51 33.0	2.565
12	2 34 17.56	2.2832	15 49 52.8	7.566	12	4 24 57.47	2.3110	19 54 3.6	2.451
13	2 36 34.60	2.2846	15 57 23.8	7.470	13	4 27 16.11	2.3103	19 56 27.3	2.337
14	2 38 51.72	2.2861	16 4 49.1	7.374	14	4 29 34.70	2.3096	19 58 44.1	2.223
15	2 41 8.92	2.2875	16 12 8.7	7.278	15	4 31 53.25	2.3088	20 0 54.1	2.109
16	2 43 26.21	2.2889	16 19 22.4	7.182	16	4 34 11.75	2.3080	20 2 57.3	1.995
17	2 45 43.58	2.2903	16 26 30.4	7.086	17	4 36 30.21	2.3071	20 4 53.6	1.881
18	2 48 1.04	2.2916	16 33 32.7	6.989	18	4 38 48.61	2.3062	20 6 43.1	1.768
19	2 50 18.57	2.2929	16 40 29.1	6.890	19	4 41 6.95	2.3052	20 8 25.8	1.655
20	2 52 36.18	2.2942	16 47 19.5	6.791	20	4 43 25.23	2.3041	20 10 1.7	1.542
21	2 54 53.87	2.2955	16 54 4.0	6.691	21	4 45 43.45	2.3030	20 11 30.8	1.429
22	2 57 11.65	2.2967	17 0 42.5	6.591	22	4 48 1.59	2.3019	20 12 53.1	1.316
23	2 59 29.49	2.2979	N.17 7 14.9	6.490	23	4 50 19.66	2.3007	N.20 14 8.7	1.203
	THURSDAY 2.					SATURDAY 4.			
0	3 1 47.38	2.2990	N.17 13 41.3	6.388	0	4 52 37.67	2.2994	N.20 15 17.5	1.090
1	3 4 5.35	2.3000	17 20 1.5	6.286	1	4 54 55.58	2.2980	20 16 19.5	0.977
2	3 6 23.38	2.3011	17 26 15.6	6.183	2	4 57 13.41	2.2965	20 17 14.7	0.864
3	3 8 41.48	2.3021	17 32 23.5	6.079	3	4 59 31.17	2.2950	20 18 3.2	0.751
4	3 10 59.63	2.3031	17 38 25.1	5.975	4	5 1 48.82	2.2934	20 18 44.9	0.638
5	3 13 17.84	2.3041	17 44 20.5	5.871	5	5 4 6.38	2.2918	20 19 19.8	0.525
6	3 15 36.12	2.3051	17 50 9.6	5.766	6	5 6 23.84	2.2902	20 19 47.9	0.413
7	3 17 54.45	2.3060	17 55 52.4	5.661	7	5 8 41.20	2.2886	20 20 9.3	0.301
8	3 20 12.83	2.3069	18 1 28.9	5.556	8	5 10 58.46	2.2868	20 20 24.0	0.189
9	3 22 31.27	2.3077	18 6 59.0	5.450	9	5 13 15.61	2.2849	20 20 32.0	0.077
10	3 24 49.75	2.3085	18 12 22.8	5.344	10	5 15 32.64	2.2829	20 20 33.3	0.034
11	3 27 8.28	2.3092	18 17 40.2	5.237	11	5 17 49.55	2.2809	20 20 28.0	0.144
12	3 29 26.86	2.3099	18 22 51.2	5.129	12	5 20 6.35	2.2789	20 20 16.0	0.254
13	3 31 45.47	2.3105	18 27 55.6	5.019	13	5 22 23.02	2.2768	20 19 57.5	0.364
14	3 34 4.11	2.3111	18 32 53.5	4.910	14	5 24 39.57	2.2747	20 19 32.4	0.474
15	3 36 22.79	2.3116	18 37 44.8	4.801	15	5 26 55.99	2.2726	20 19 0.6	0.584
16	3 38 41.50	2.3121	18 42 29.6	4.692	16	5 29 12.28	2.2705	20 18 22.3	0.694
17	3 41 0.24	2.3125	18 47 7.8	4.582	17	5 31 28.44	2.2683	20 17 37.4	0.802
18	3 43 19.00	2.3129	18 51 39.4	4.472	18	5 33 44.48	2.2660	20 16 46.0	0.910
19	3 45 37.79	2.3133	18 56 4.4	4.362	19	5 36 0.36	2.2636	20 15 48.1	1.018
20	3 47 56.59	2.3136	19 0 22.8	4.252	20	5 38 16.10	2.2612	20 14 43.8	1.126
21	3 50 15.41	2.3138	19 4 34.6	4.141	21	5 40 31.71	2.2588	20 13 33.0	1.234
22	3 52 34.24	2.3140	19 8 39.7	4.030	22	5 42 47.16	2.2563	20 12 15.8	1.342
23	3 54 53.08	2.3141	19 12 38.1	3.918	23	5 45 2.46	2.2537	20 10 52.1	1.448
24	3 57 11.94	2.3142	N.19 16 29.9	3.806	24	5 47 17.61	2.2511	N.20 9 22.0	1.553

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 5.					TUESDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 47 17.61	2.2511	N.20 9 22.0	1.553	0	7 31 39.73	2.0889	N.17 3 15.6	5.956
1	5 49 32.59	2.2484	20 7 45.7	1.658	1	7 33 44.95	2.0852	16 57 16.0	6.031
2	5 51 47.41	2.2457	20 6 3.1	1.762	2	7 35 49.95	2.0815	16 51 11.9	6.106
3	5 54 2.08	2.2430	20 4 14.2	1.866	3	7 37 54.74	2.0778	16 45 3.3	6.180
4	5 56 16.57	2.2402	20 2 19.1	1.971	4	7 39 59.29	2.0741	16 38 50.3	6.254
5	5 58 30.90	2.2373	20 0 17.7	2.075	5	7 42 3.63	2.0704	16 32 32.9	6.326
6	6 0 45.06	2.2344	19 58 10.1	2.179	6	7 44 7.75	2.0667	16 26 11.2	6.397
7	6 2 59.04	2.2315	19 55 56.3	2.283	7	7 46 11.64	2.0630	16 19 45.2	6.468
8	6 5 12.84	2.2285	19 53 36.3	2.386	8	7 48 15.31	2.0593	16 13 15.0	6.539
9	6 7 26.47	2.2255	19 51 10.1	2.488	9	7 50 18.77	2.0557	16 6 40.6	6.609
10	6 9 39.91	2.2225	19 48 37.9	2.588	10	7 52 22.00	2.0521	16 0 2.0	6.679
11	6 11 53.17	2.2195	19 45 59.7	2.688	11	7 54 25.02	2.0484	15 53 19.3	6.747
12	6 14 6.25	2.2164	19 43 15.4	2.787	12	7 56 27.82	2.0448	15 46 32.4	6.814
13	6 16 19.14	2.2133	19 40 25.3	2.886	13	7 58 30.40	2.0412	15 39 41.7	6.880
14	6 18 31.84	2.2101	19 37 29.2	2.984	14	8 0 32.77	2.0376	15 32 47.0	6.946
15	6 20 44.35	2.2069	19 34 27.3	3.082	15	8 2 34.92	2.0340	15 25 48.2	7.011
16	6 22 56.66	2.2036	19 31 19.5	3.180	16	8 4 36.85	2.0305	15 18 45.6	7.076
17	6 25 8.78	2.2003	19 28 5.7	3.277	17	8 6 38.57	2.0269	15 11 39.2	7.140
18	6 27 20.70	2.1970	19 24 46.1	3.374	18	8 8 40.09	2.0234	15 4 28.9	7.203
19	6 29 32.42	2.1937	19 21 20.8	3.470	19	8 10 41.39	2.0199	14 57 14.9	7.265
20	6 31 43.94	2.1903	19 17 49.8	3.566	20	8 12 42.48	2.0164	14 49 57.2	7.327
21	6 33 55.25	2.1868	19 14 13.1	3.661	21	8 14 43.36	2.0130	14 42 35.7	7.388
22	6 36 6.35	2.1833	19 10 30.7	3.755	22	8 16 44.04	2.0096	14 35 10.6	7.449
23	6 38 17.25	2.1799	N.19 6 42.6	3.848	23	8 18 44.52	2.0062	N.14 27 41.9	7.506
	MONDAY 6.					WEDNESDAY 8.			
0	6 40 27.94	2.1765	N.19 2 48.9	3.939	0	8 20 44.79	2.0028	N.14 20 9.7	7.566
1	6 42 38.42	2.1730	18 58 49.9	4.030	1	8 22 44.86	1.9995	14 12 34.0	7.624
2	6 44 48.70	2.1695	18 54 45.4	4.121	2	8 24 44.73	1.9961	14 4 54.8	7.682
3	6 46 58.77	2.1660	18 50 35.3	4.212	3	8 26 44.40	1.9927	13 57 12.1	7.739
4	6 49 8.62	2.1625	18 46 19.9	4.303	4	8 28 43.87	1.9894	13 49 26.1	7.796
5	6 51 18.26	2.1589	18 41 59.1	4.392	5	8 30 43.14	1.9862	13 41 36.7	7.852
6	6 53 27.69	2.1553	18 37 32.8	4.480	6	8 32 42.21	1.9830	13 33 43.9	7.906
7	6 55 36.90	2.1517	18 33 1.4	4.568	7	8 34 41.09	1.9798	13 25 48.0	7.960
8	6 57 45.89	2.1481	18 28 24.7	4.656	8	8 36 39.78	1.9765	13 17 48.8	8.014
9	6 59 54.66	2.1444	18 23 42.6	4.743	9	8 38 38.29	1.9733	13 9 46.4	8.067
10	7 2 3.21	2.1407	18 18 55.4	4.830	10	8 40 36.60	1.9701	13 1 40.9	8.118
11	7 4 11.54	2.1371	18 14 3.1	4.915	11	8 42 34.73	1.9671	12 53 32.3	8.170
12	7 6 19.66	2.1334	18 9 5.6	4.999	12	8 44 32.67	1.9641	12 45 20.6	8.221
13	7 8 27.55	2.1297	18 4 3.2	5.082	13	8 46 30.41	1.9612	12 37 5.9	8.270
14	7 10 35.22	2.1261	17 58 55.8	5.165	14	8 48 28.00	1.9582	12 28 48.2	8.319
15	7 12 42.68	2.1224	17 53 43.4	5.247	15	8 50 25.43	1.9553	12 20 27.6	8.368
16	7 14 49.91	2.1187	17 48 26.1	5.329	16	8 52 22.66	1.9524	12 12 4.1	8.417
17	7 16 56.92	2.1150	17 43 3.9	5.410	17	8 54 19.72	1.9495	12 3 37.7	8.464
18	7 19 3.71	2.1113	17 37 36.9	5.490	18	8 56 16.61	1.9467	11 55 8.4	8.511
19	7 21 10.27	2.1075	17 32 5.1	5.570	19	8 58 13.33	1.9439	11 46 36.4	8.556
20	7 23 16.61	2.1038	17 26 28.6	5.649	20	9 0 9.88	1.9411	11 38 1.7	8.602
21	7 25 22.73	2.1001	17 20 47.3	5.727	21	9 2 6.26	1.9383	11 29 24.2	8.648
22	7 27 28.62	2.0963	17 15 1.3	5.805	22	9 4 2.48	1.9356	11 20 44.1	8.693
23	7 29 34.28	2.0926	17 9 10.7	5.881	23	9 5 58.54	1.9330	11 12 1.3	8.736
24	7 31 39.73	2.0889	N.17 3 15.6	5.956	24	9 7 54.43	1.9304	N.11 3 15.7	8.778

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 7 54.43	1.9304	N. 11 3 15.7	8.778
1	9 9 50.17	1.9278	10 54 27.8	8.820
2	9 11 45.76	1.9253	10 45 37.4	8.862
3	9 13 41.21	1.9228	10 36 44.4	8.903
4	9 15 36.51	1.9203	10 27 49.0	8.944
5	9 17 31.66	1.9179	10 18 51.2	8.985
6	9 19 26.66	1.9155	10 9 51.0	9.025
7	9 21 21.52	1.9132	10 0 48.5	9.063
8	9 23 16.25	1.9109	9 51 43.6	9.101
9	9 25 10.84	1.9086	9 42 36.4	9.138
10	9 27 5.29	1.9064	9 33 27.0	9.175
11	9 28 59.61	1.9043	9 24 15.4	9.211
12	9 30 53.81	1.9022	9 15 1.7	9.247
13	9 32 47.88	1.9001	9 5 45.9	9.282
14	9 34 41.83	1.8981	8 56 28.0	9.317
15	9 36 35.65	1.8961	8 47 7.9	9.351
16	9 38 29.35	1.8941	8 37 45.9	9.383
17	9 40 22.94	1.8922	8 28 21.9	9.416
18	9 42 16.42	1.8904	8 18 56.0	9.449
19	9 44 9.79	1.8886	8 9 28.1	9.481
20	9 46 3.05	1.8868	7 59 58.3	9.512
21	9 47 56.21	1.8850	7 50 26.7	9.543
22	9 49 49.26	1.8833	7 40 53.3	9.573
23	9 51 42.21	1.8817	N. 7 31 18.1	9.603

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 53 35.07	1.8802	N. 7 21 41.0	9.632
1	9 55 27.84	1.8787	7 12 2.3	9.660
2	9 57 20.52	1.8772	7 2 21.9	9.687
3	9 59 13.12	1.8758	6 52 39.9	9.713
4	10 1 5.63	1.8744	6 42 56.4	9.739
5	10 2 58.06	1.8731	6 33 11.3	9.765
6	10 4 50.40	1.8718	6 23 24.6	9.790
7	10 6 42.67	1.8706	6 13 36.3	9.815
8	10 8 34.87	1.8695	6 3 46.7	9.839
9	10 10 27.01	1.8684	5 53 55.9	9.862
10	10 12 19.08	1.8674	5 44 3.6	9.884
11	10 14 11.09	1.8663	5 34 10.0	9.906
12	10 16 3.05	1.8653	5 24 15.0	9.928
13	10 17 54.94	1.8644	5 14 18.7	9.950
14	10 19 46.78	1.8635	5 4 21.1	9.971
15	10 21 38.56	1.8627	4 54 22.2	9.991
16	10 23 30.30	1.8620	4 44 22.2	10.011
17	10 25 22.00	1.8613	4 34 21.0	10.030
18	10 27 13.66	1.8606	4 24 18.5	10.049
19	10 29 5.28	1.8600	4 14 15.0	10.067
20	10 30 56.87	1.8595	4 4 10.5	10.084
21	10 32 48.43	1.8591	3 54 4.9	10.101
22	10 34 39.97	1.8587	3 43 58.4	10.118
23	10 36 31.48	1.8584	3 33 50.9	10.134
24	10 38 22.97	1.8581	N. 3 23 42.3	10.150

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 38 22.97	1.8581	N. 3 23 42.3	10.150
1	10 40 14.45	1.8578	3 13 32.9	10.165
2	10 42 5.91	1.8576	3 3 22.6	10.180
3	10 43 57.36	1.8574	2 53 11.3	10.194
4	10 45 48.79	1.8572	2 42 59.3	10.207
5	10 47 40.22	1.8571	2 32 46.5	10.220
6	10 49 31.66	1.8571	2 22 33.0	10.232
7	10 51 23.10	1.8572	2 12 18.7	10.244
8	10 53 14.54	1.8573	2 2 3.8	10.256
9	10 55 5.97	1.8574	1 51 48.1	10.267
10	10 56 57.42	1.8576	1 41 31.8	10.277
11	10 58 48.89	1.8579	1 31 14.9	10.287
12	11 0 40.37	1.8583	1 20 57.4	10.296
13	11 2 31.89	1.8588	1 10 39.5	10.304
14	11 4 23.43	1.8593	1 10 21.1	10.312
15	11 6 15.00	1.8598	0 50 2.1	10.319
16	11 8 6.60	1.8603	0 39 42.8	10.326
17	11 9 58.24	1.8609	0 29 23.1	10.333
18	11 11 49.91	1.8615	0 19 3.0	10.339
19	11 13 41.63	1.8622	N. 0 8 42.6	10.344
20	11 15 33.39	1.8630	S. 0 1 38.1	10.349
21	11 17 25.19	1.8638	0 11 59.0	10.353
22	11 19 17.05	1.8647	0 22 20.2	10.356
23	11 21 8.96	1.8657	S. 0 32 41.6	10.358

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	11 23 0.92	1.8668	S. 0 43 3.2	10.360
1	11 24 52.96	1.8680	0 53 24.8	10.361
2	11 26 45.07	1.8691	1 3 46.5	10.362
3	11 28 37.26	1.8703	1 14 8.3	10.363
4	11 30 29.51	1.8715	1 24 30.1	10.364
5	11 32 21.84	1.8728	1 34 51.9	10.363
6	11 34 14.25	1.8741	1 45 13.7	10.362
7	11 36 6.74	1.8755	1 55 35.4	10.361
8	11 37 59.31	1.8769	2 5 57.0	10.359
9	11 39 51.97	1.8784	2 16 18.4	10.357
10	11 41 44.72	1.8799	2 26 39.7	10.354
11	11 43 37.57	1.8815	2 37 0.8	10.350
12	11 45 30.51	1.8832	2 47 21.7	10.345
13	11 47 23.57	1.8851	2 57 42.1	10.340
14	11 49 16.73	1.8870	3 8 2.3	10.334
15	11 51 10.00	1.8888	3 18 22.2	10.327
16	11 53 3.39	1.8907	3 28 41.6	10.320
17	11 54 56.90	1.8927	3 39 0.5	10.312
18	11 56 50.52	1.8948	3 49 19.0	10.304
19	11 58 44.28	1.8969	3 59 37.0	10.295
20	12 0 38.16	1.8991	4 9 54.4	10.286
21	12 2 32.16	1.9013	4 20 11.3	10.277
22	12 4 26.31	1.9036	4 30 27.6	10.267
23	12 6 20.60	1.9060	4 40 43.3	10.256
24	12 8 15.00	1.9084	S. 4 50 58.3	10.244

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 8 15.00	1.9084	S. 4 50 58.3	10.244
1	12 10 9.58	1.9109	5 1 12.5	10.230
2	12 12 4.31	1.9134	5 11 25.9	10.216
3	12 13 59.18	1.9159	5 21 38.5	10.202
4	12 15 54.21	1.9184	5 31 50.2	10.188
5	12 17 49.40	1.9210	5 42 1.0	10.173
6	12 19 44.74	1.9237	5 52 11.0	10.157
7	12 21 40.25	1.9265	6 2 19.9	10.140
8	12 23 35.93	1.9293	6 12 27.8	10.124
9	12 25 31.78	1.9322	6 22 34.7	10.107
10	12 27 27.81	1.9352	6 32 40.5	10.089
11	12 29 24.02	1.9382	6 42 45.2	10.070
12	12 31 20.40	1.9413	6 52 48.9	10.050
13	12 33 16.98	1.9445	7 2 51.2	10.028
14	12 35 13.75	1.9477	7 12 52.2	10.007
15	12 37 10.70	1.9509	7 22 52.0	9.985
16	12 39 7.85	1.9541	7 32 50.4	9.962
17	12 41 5.20	1.9574	7 42 47.4	9.938
18	12 43 2.75	1.9608	7 52 42.9	9.913
19	12 45 0.51	1.9642	8 2 36.9	9.888
20	12 46 58.47	1.9677	8 12 29.4	9.862
21	12 48 56.63	1.9713	8 22 20.3	9.835
22	12 50 55.02	1.9750	8 32 9.6	9.808
23	12 52 53.63	1.9787	S. 8 41 57.2	9.782

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 54 52.46	1.9824	S. 8 51 43.2	9.758
1	12 56 51.52	1.9861	9 1 27.3	9.721
2	12 58 50.80	1.9899	9 11 9.6	9.691
3	13 0 50.30	1.9937	9 20 50.2	9.660
4	13 2 50.04	1.9976	9 30 28.8	9.627
5	13 4 50.02	2.0015	9 40 5.4	9.594
6	13 6 50.23	2.0055	9 49 40.1	9.560
7	13 8 50.69	2.0096	9 59 12.7	9.526
8	13 10 51.39	2.0137	10 8 43.2	9.492
9	13 12 52.34	2.0179	10 18 11.6	9.457
10	13 14 53.54	2.0221	10 27 37.8	9.420
11	13 16 55.00	2.0263	10 37 1.8	9.381
12	13 18 56.71	2.0306	10 46 23.5	9.341
13	13 20 58.68	2.0350	10 55 42.7	9.301
14	13 23 0.91	2.0394	11 4 59.5	9.261
15	13 25 3.41	2.0438	11 14 13.9	9.220
16	13 27 6.17	2.0483	11 23 25.8	9.177
17	13 29 9.20	2.0528	11 32 35.1	9.134
18	13 31 12.51	2.0573	11 41 41.8	9.090
19	13 33 16.08	2.0619	11 50 46.0	9.046
20	13 35 19.94	2.0666	11 59 47.3	9.000
21	13 37 24.08	2.0713	12 8 45.8	8.953
22	13 39 28.51	2.0761	12 17 41.5	8.905
23	13 41 33.22	2.0809	12 26 34.3	8.856
24	13 43 38.21	2.0857	S. 12 35 24.2	8.806

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 43 38.21	2.0857	S. 12 35 24.2	8.806
1	13 45 43.49	2.0905	12 44 10.9	8.754
2	13 47 49.07	2.0954	12 52 54.6	8.703
3	13 49 54.94	2.1003	13 1 35.2	8.651
4	13 52 1.11	2.1053	13 10 12.6	8.598
5	13 54 7.58	2.1103	13 18 46.8	8.544
6	13 56 14.34	2.1153	13 26 17.8	8.489
7	13 58 21.41	2.1203	13 35 45.4	8.432
8	14 0 28.78	2.1254	13 44 9.6	8.375
9	14 2 36.45	2.1305	13 52 30.4	8.317
10	14 4 44.43	2.1356	14 0 47.6	8.259
11	14 6 52.72	2.1408	14 9 1.3	8.198
12	14 9 1.33	2.1460	14 17 11.4	8.136
13	14 11 10.25	2.1512	14 25 17.6	8.072
14	14 13 19.48	2.1564	14 33 20.0	8.008
15	14 15 29.03	2.1617	14 41 18.5	7.944
16	14 17 38.89	2.1670	14 49 13.1	7.879
17	14 19 49.07	2.1723	14 57 3.8	7.813
18	14 21 59.58	2.1777	15 4 50.6	7.746
19	14 24 10.41	2.1831	15 12 33.2	7.677
20	14 26 21.56	2.1885	15 20 11.7	7.608
21	14 28 33.03	2.1939	15 27 46.0	7.538
22	14 30 44.83	2.1994	15 35 16.0	7.466
23	14 32 56.96	2.2048	S. 15 42 41.7	7.392

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 35 9.41	2.2102	S. 15 50 3.1	7.317
1	14 37 22.19	2.2157	15 57 19.8	7.241
2	14 39 35.29	2.2211	16 4 31.9	7.165
3	14 41 48.72	2.2265	16 11 39.5	7.088
4	14 44 2.48	2.2320	16 18 42.4	7.011
5	14 46 16.56	2.2375	16 25 40.6	6.932
6	14 48 30.97	2.2430	16 32 34.2	6.852
7	14 50 45.71	2.2485	16 39 22.9	6.771
8	14 53 0.79	2.2540	16 46 6.7	6.688
9	14 55 16.20	2.2595	16 52 45.5	6.603
10	14 57 31.94	2.2651	16 59 19.0	6.516
11	14 59 48.01	2.2706	17 5 47.4	6.429
12	15 2 4.42	2.2761	17 12 10.6	6.342
13	15 4 21.14	2.2816	17 18 28.5	6.256
14	15 6 38.20	2.2870	17 24 41.1	6.167
15	15 8 55.59	2.2924	17 30 48.5	6.077
16	15 11 13.30	2.2978	17 36 50.3	5.986
17	15 13 31.33	2.3033	17 42 46.7	5.894
18	15 15 49.69	2.3087	17 48 37.6	5.801
19	15 18 8.37	2.3141	17 54 22.7	5.706
20	15 20 27.38	2.3195	18 0 2.1	5.610
21	15 22 46.71	2.3249	18 5 35.9	5.513
22	15 25 6.36	2.3303	18 11 3.7	5.415
23	15 27 26.33	2.3356	18 16 25.6	5.315
24	15 29 46.63	2.3408	S. 18 21 41.7	5.214

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 29 46.63	2.3408	S. 18 21 41.7	5.214
1	15 32 7.23	2.3460	18 26 51.5	5.118
2	15 34 28.14	2.3512	18 31 55.2	5.012
3	15 36 49.37	2.3564	18 36 52.9	4.910
4	15 39 10.90	2.3615	18 41 44.4	4.808
5	15 41 32.75	2.3667	18 46 29.7	4.703
6	15 43 54.88	2.3718	18 51 8.7	4.597
7	15 46 17.34	2.3769	18 55 41.2	4.489
8	15 48 40.10	2.3820	19 0 7.2	4.380
9	15 51 3.17	2.3870	19 4 26.8	4.270
10	15 53 26.53	2.3920	19 8 39.7	4.160
11	15 55 50.19	2.3969	19 12 45.9	4.049
12	15 58 14.15	2.4017	19 16 45.5	3.937
13	16 0 38.39	2.4064	19 20 38.3	3.824
14	16 3 2.91	2.4111	19 24 24.3	3.710
15	16 5 27.72	2.4158	19 28 3.4	3.595
16	16 7 52.80	2.4204	19 31 35.6	3.480
17	16 10 18.16	2.4249	19 35 0.9	3.363
18	16 12 43.80	2.4294	19 38 19.2	3.245
19	16 15 9.70	2.4339	19 41 30.3	3.126
20	16 17 35.86	2.4382	19 44 34.2	3.007
21	16 20 2.28	2.4424	19 47 31.0	2.887
22	16 22 28.95	2.4466	19 50 20.5	2.765
23	16 24 55.87	2.4507	S. 19 53 2.7	2.643

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 27 23.03	2.4548	S. 19 55 37.6	2.521
1	16 29 50.43	2.4589	19 58 5.1	2.398
2	16 32 18.08	2.4629	20 0 25.2	2.274
3	16 34 45.97	2.4668	20 2 38.0	2.149
4	16 37 14.08	2.4705	20 4 43.1	2.022
5	16 39 42.42	2.4742	20 6 40.6	1.895
6	16 42 10.99	2.4779	20 8 30.4	1.767
7	16 44 39.76	2.4815	20 10 12.5	1.637
8	16 47 8.75	2.4849	20 11 46.8	1.507
9	16 49 37.96	2.4883	20 13 13.4	1.377
10	16 52 7.35	2.4917	20 14 32.1	1.246
11	16 54 36.94	2.4949	20 15 42.9	1.116
12	16 57 6.74	2.4980	20 16 45.9	0.986
13	16 59 36.70	2.5011	20 17 41.2	0.856
14	17 2 6.85	2.5040	20 18 28.6	0.724
15	17 4 37.18	2.5068	20 19 8.2	0.592
16	17 7 7.66	2.5095	20 19 39.7	0.459
17	17 9 38.31	2.5121	20 20 3.2	0.325
18	17 12 9.12	2.5147	20 20 18.7	0.190
19	17 14 40.07	2.5173	20 20 26.0	0.054
20	17 17 11.17	2.5197	20 20 25.2	0.081
21	17 19 42.43	2.5220	20 20 16.3	0.216
22	17 22 13.82	2.5241	20 19 59.2	0.352
23	17 24 45.32	2.5261	20 19 34.0	0.488
24	17 27 16.92	2.5280	S. 20 19 0.6	0.624

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 27 16.92	2.5280	S. 20 19 0.6	0.624
1	17 29 48.66	2.5298	20 18 19.1	0.760
2	17 32 20.50	2.5316	20 17 29.4	0.897
3	17 34 52.43	2.5334	20 16 31.4	1.034
4	17 37 24.48	2.5351	20 15 25.3	1.170
5	17 39 56.63	2.5366	20 14 10.9	1.308
6	17 42 28.87	2.5380	20 12 48.3	1.446
7	17 45 1.18	2.5393	20 11 17.4	1.584
8	17 47 33.58	2.5406	20 9 38.2	1.722
9	17 50 6.06	2.5417	20 7 50.7	1.860
10	17 52 38.59	2.5428	20 5 55.0	1.998
11	17 55 11.18	2.5436	20 3 51.0	2.135
12	17 57 43.82	2.5443	20 1 38.7	2.272
13	18 0 16.49	2.5449	19 59 18.2	2.410
14	18 2 49.20	2.5454	19 56 49.5	2.547
15	18 5 21.94	2.5459	19 54 12.5	2.684
16	18 7 54.70	2.5463	19 51 27.3	2.822
17	18 10 27.48	2.5465	19 48 33.9	2.959
18	18 13 0.28	2.5466	19 45 32.2	3.096
19	18 15 33.08	2.5467	19 42 22.3	3.233
20	18 18 5.88	2.5466	19 39 4.2	3.370
21	18 20 38.67	2.5464	19 35 37.9	3.507
22	18 23 11.44	2.5461	19 32 3.4	3.644
23	18 25 44.19	2.5457	S. 19 28 20.7	3.780

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 28 16.93	2.5452	S. 19 24 29.8	3.915
1	18 30 49.62	2.5446	19 20 31.0	4.049
2	18 33 22.27	2.5440	19 16 24.1	4.183
3	18 35 54.89	2.5433	19 12 9.0	4.317
4	18 38 37.46	2.5425	19 7 46.0	4.450
5	18 41 9.98	2.5416	19 3 15.0	4.583
6	18 43 32.44	2.5406	18 58 36.1	4.715
7	18 46 4.83	2.5395	18 53 49.3	4.847
8	18 48 37.16	2.5383	18 48 54.6	4.978
9	18 51 9.43	2.5370	18 43 51.9	5.108
10	18 53 41.60	2.5356	18 38 41.6	5.238
11	18 56 13.69	2.5341	18 33 23.5	5.368
12	18 58 45.70	2.5325	18 27 57.5	5.497
13	19 1 17.60	2.5309	18 22 23.9	5.625
14	19 3 49.40	2.5290	18 16 42.6	5.752
15	19 6 21.10	2.5270	18 10 53.7	5.878
16	19 8 52.70	2.5251	18 4 57.3	6.004
17	19 11 24.18	2.5232	17 58 53.4	6.129
18	19 13 55.53	2.5214	17 52 41.9	6.253
19	19 16 26.76	2.5196	17 46 23.1	6.377
20	19 18 57.87	2.5174	17 39 56.9	6.499
21	19 21 28.85	2.5152	17 33 23.2	6.620
22	19 23 59.68	2.5129	17 26 42.4	6.741
23	19 26 30.38	2.5105	17 19 54.4	6.860
24	19 29 0.95	2.5081	S. 17 12 59.2	6.978

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 29 0.95	2.5081	S. 17 12 59.2	6.978
1	19 31 31.35	2.5056	17 5 57.0	7.095
2	19 34 1.61	2.5030	16 58 47.9	7.211
3	19 36 31.72	2.5004	16 51 31.8	7.326
4	19 39 1.66	2.4977	16 44 8.8	7.440
5	19 41 31.44	2.4949	16 36 39.0	7.554
6	19 44 1.06	2.4921	16 29 2.4	7.667
7	19 46 30.50	2.4893	16 21 19.0	7.779
8	19 48 59.77	2.4864	16 13 29.0	7.889
9	19 51 28.87	2.4835	16 5 32.3	7.999
10	19 53 57.79	2.4805	15 57 29.1	8.108
11	19 56 26.53	2.4775	15 49 19.5	8.214
12	19 58 55.08	2.4744	15 41 3.5	8.319
13	20 1 23.45	2.4713	15 32 41.3	8.423
14	20 3 51.63	2.4681	15 24 12.9	8.526
15	20 6 19.63	2.4649	15 15 38.3	8.628
16	20 8 47.42	2.4616	15 6 57.6	8.728
17	20 11 15.02	2.4584	14 58 11.0	8.827
18	20 13 42.43	2.4551	14 49 18.4	8.925
19	20 16 9.63	2.4518	14 40 20.0	9.022
20	20 18 36.64	2.4485	14 31 15.8	9.118
21	20 21 3.45	2.4451	14 22 5.9	9.213
22	20 23 30.05	2.4417	14 12 50.3	9.307
23	20 25 56.45	2.4383	S. 14 3 29.2	9.398

WEDNESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 28 22.64	2.4349	S. 13 54 2.6	9.488
1	20 30 48.63	2.4314	13 44 30.7	9.577
2	20 33 14.41	2.4279	13 34 53.5	9.664
3	20 35 39.98	2.4244	13 25 11.1	9.750
4	20 38 5.34	2.4209	13 15 23.6	9.835
5	20 40 30.49	2.4174	13 5 31.0	9.919
6	20 42 55.43	2.4139	12 55 33.4	10.002
7	20 45 20.16	2.4104	12 45 30.9	10.084
8	20 47 44.67	2.4069	12 35 23.5	10.164
9	20 50 8.96	2.4033	12 25 11.3	10.242
10	20 52 33.05	2.3997	12 14 54.5	10.319
11	20 54 56.93	2.3962	12 4 33.2	10.394
12	20 57 20.61	2.3926	11 54 7.3	10.467
13	20 59 44.07	2.3891	11 43 37.2	10.539
14	21 2 7.31	2.3856	11 33 2.8	10.610
15	21 4 30.34	2.3820	11 22 24.1	10.680
16	21 6 53.16	2.3785	11 11 41.3	10.749
17	21 9 15.76	2.3750	11 0 54.4	10.817
18	21 11 38.15	2.3714	10 50 3.4	10.883
19	21 14 0.33	2.3679	10 39 8.6	10.947
20	21 16 22.30	2.3644	10 28 10.0	11.010
21	21 18 44.06	2.3609	10 17 7.6	11.072
22	21 21 5.61	2.3575	10 6 1.5	11.132
23	21 23 26.96	2.3541	9 54 51.9	11.190
24	21 25 48.10	2.3507	S. 9 43 38.7	11.246

THURSDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 25 48.10	2.3507	S. 9 43 38.7	11.246
1	21 28 9.04	2.3473	9 32 22.3	11.301
2	21 30 29.78	2.3439	9 21 2.7	11.355
3	21 32 50.32	2.3405	9 9 39.8	11.408
4	21 35 10.65	2.3371	8 58 13.8	11.460
5	21 37 30.78	2.3338	8 46 44.8	11.510
6	21 39 50.70	2.3305	8 35 12.7	11.558
7	21 42 10.44	2.3273	8 23 37.9	11.605
8	21 44 29.98	2.3240	8 12 0.3	11.651
9	21 46 49.33	2.3208	8 0 19.9	11.696
10	21 49 8.49	2.3176	7 48 37.0	11.739
11	21 51 27.46	2.3145	7 36 51.5	11.780
12	21 53 46.23	2.3115	7 25 3.5	11.819
13	21 56 4.83	2.3085	7 13 13.3	11.856
14	21 58 23.25	2.3054	7 1 20.9	11.893
15	22 0 41.50	2.3023	6 49 26.3	11.929
16	22 2 59.55	2.2993	6 37 29.6	11.964
17	22 5 17.42	2.2964	6 25 30.8	11.997
18	22 7 35.12	2.2935	6 13 30.0	12.029
19	22 9 52.64	2.2906	6 1 27.4	12.059
20	22 12 9.99	2.2877	5 49 23.0	12.087
21	22 14 27.17	2.2848	5 37 16.9	12.114
22	22 16 44.18	2.2820	5 25 9.1	12.140
23	22 19 1.02	2.2793	S. 5 12 59.8	12.164

FRIDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 21 17.70	2.2767	S. 5 0 48.9	12.187
1	22 23 34.23	2.2741	4 48 36.4	12.209
2	22 25 50.60	2.2715	4 36 22.8	12.231
3	22 28 6.82	2.2690	4 24 8.0	12.252
4	22 30 22.89	2.2665	4 11 52.2	12.272
5	22 32 38.81	2.2640	3 59 35.5	12.289
6	22 34 54.57	2.2615	3 47 17.8	12.304
7	22 37 10.19	2.2591	3 34 59.3	12.316
8	22 39 25.67	2.2568	3 22 40.0	12.327
9	22 41 41.02	2.2546	3 10 20.0	12.337
10	22 43 56.23	2.2524	2 57 59.5	12.347
11	22 46 11.31	2.2503	2 45 38.4	12.357
12	22 48 26.27	2.2482	2 33 16.8	12.366
13	22 50 41.10	2.2462	2 20 54.7	12.373
14	22 52 55.81	2.2441	2 8 32.2	12.378
15	22 55 10.40	2.2421	1 56 9.4	12.381
16	22 57 24.87	2.2401	1 43 46.5	12.384
17	22 59 39.22	2.2382	1 31 23.4	12.386
18	23 1 53.45	2.2363	1 19 0.2	12.386
19	23 4 7.58	2.2345	1 6 37.2	12.385
20	23 6 21.60	2.2328	0 54 14.2	12.383
21	23 8 35.52	2.2311	0 41 51.2	12.380
22	23 10 49.34	2.2295	0 29 28.6	12.376
23	23 13 3.06	2.2279	0 17 6.3	12.370
24	23 15 16.69	2.2264	S. 0 4 44.3	12.362

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 15 16.69	2.2264	S. 0 4 44.3	12.362
1	23 17 30.23	2.2249	N. 0 7 37.1	12.352
2	23 19 43.68	2.2234	0 19 57.9	12.342
3	23 21 57.05	2.2220	0 32 18.1	12.331
4	23 24 10.33	2.2206	0 44 37.6	12.319
5	23 26 23.53	2.2193	0 56 56.3	12.305
6	23 28 36.65	2.2180	1 9 14.1	12.290
7	23 30 49.70	2.2168	1 21 31.0	12.274
8	23 33 2.68	2.2157	1 33 46.9	12.258
9	23 35 15.58	2.2146	1 46 1.9	12.241
10	23 37 28.42	2.2136	1 58 15.7	12.222
11	23 39 41.20	2.2125	2 10 28.4	12.201
12	23 41 53.93	2.2115	2 22 39.9	12.179
13	23 44 6.60	2.2106	2 34 49.9	12.156
14	23 46 19.21	2.2098	2 46 58.5	12.132
15	23 48 31.77	2.2090	2 59 5.7	12.107
16	23 50 44.29	2.2082	3 11 11.4	12.081
17	23 52 56.76	2.2075	3 23 15.4	12.054
18	23 55 9.18	2.2068	3 35 17.8	12.026
19	23 57 21.57	2.2061	3 47 18.4	11.996
20	23 59 33.92	2.2055	3 59 17.2	11.966
21	0 1 46.23	2.2050	4 11 14.3	11.935
22	0 3 58.52	2.2045	4 23 9.4	11.904
23	0 6 10.78	2.2041	N. 4 35 2.6	11.870

SUNDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	0 8 23.01	2.2037	N. 4 46 53.8	11.835
1	0 10 35.21	2.2033	4 58 42.8	11.799
2	0 12 47.40	2.2030	5 10 29.6	11.762
3	0 14 59.58	2.2027	5 22 14.1	11.724
4	0 17 11.74	2.2025	5 33 56.3	11.684
5	0 19 23.89	2.2024	5 45 36.1	11.644
6	0 21 36.02	2.2023	5 57 13.6	11.603
7	0 23 48.15	2.2022	6 8 48.5	11.562
8	0 26 0.28	2.2022	6 20 20.9	11.519
9	0 28 12.40	2.2022	6 31 50.8	11.475
10	0 30 24.54	2.2023	6 43 17.9	11.430
11	0 32 36.68	2.2024	6 54 42.3	11.384
12	0 34 48.83	2.2025	7 6 3.9	11.337
13	0 37 0.98	2.2026	7 17 22.6	11.288
14	0 39 13.14	2.2028	7 28 38.4	11.239
15	0 41 25.32	2.2030	7 39 51.3	11.189
16	0 43 37.51	2.2033	7 51 1.1	11.139
17	0 45 49.72	2.2036	8 2 7.8	11.087
18	0 48 1.94	2.2039	8 13 11.5	11.034
19	0 50 14.19	2.2043	8 24 11.8	10.980
20	0 52 26.46	2.2047	8 35 8.9	10.926
21	0 54 38.76	2.2052	8 46 2.8	10.871
22	0 56 51.09	2.2057	8 56 53.3	10.814
23	0 59 3.45	2.2062	9 7 40.4	10.756
24	1 1 15.83	2.2067	N. 9 18 24.0	10.697

MONDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 1 15.83	2.2067	N. 9 18 24.0	10.697
1	1 3 28.26	2.2073	9 29 4.0	10.638
2	1 5 40.72	2.2079	9 39 40.4	10.578
3	1 7 53.21	2.2085	9 50 13.3	10.517
4	1 10 5.74	2.2092	10 0 42.3	10.454
5	1 12 18.31	2.2099	10 11 7.6	10.391
6	1 14 30.93	2.2106	10 21 29.2	10.328
7	1 16 43.59	2.2114	10 31 46.8	10.263
8	1 18 56.30	2.2122	10 42 0.5	10.198
9	1 21 9.06	2.2131	10 52 10.4	10.132
10	1 23 21.87	2.2140	11 2 16.1	10.064
11	1 25 34.73	2.2148	11 12 17.8	9.996
12	1 27 47.65	2.2156	11 22 15.5	9.927
13	1 30 0.62	2.2165	11 32 8.9	9.855
14	1 32 13.64	2.2174	11 41 58.1	9.783
15	1 34 26.71	2.2183	11 51 43.0	9.711
16	1 36 39.84	2.2193	12 1 23.5	9.640
17	1 38 53.03	2.2203	12 10 59.7	9.568
18	1 41 6.27	2.2213	12 20 31.6	9.495
19	1 43 19.58	2.2223	12 29 58.9	9.420
20	1 45 32.95	2.2233	12 39 21.7	9.344
21	1 47 46.38	2.2243	12 48 40.1	9.267
22	1 49 59.87	2.2253	12 57 53.8	9.190
23	1 52 13.42	2.2264	N.13 7 2.8	9.112

TUESDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 54 27.04	2.2275	N.13 16 7.0	9.032
1	1 56 40.73	2.2287	13 25 6.5	8.952
2	1 58 54.48	2.2298	13 34 1.2	8.872
3	2 1 8.30	2.2309	13 42 51.0	8.791
4	2 3 22.19	2.2320	13 51 36.0	8.710
5	2 5 36.14	2.2331	14 0 16.1	8.627
6	2 7 50.16	2.2342	14 8 51.2	8.543
7	2 10 4.25	2.2354	14 17 21.2	8.459
8	2 12 18.41	2.2365	14 25 46.2	8.375
9	2 14 32.64	2.2376	14 34 6.2	8.291
10	2 16 46.93	2.2388	14 42 21.0	8.204
11	2 19 1.29	2.2399	14 50 30.6	8.118
12	2 21 15.73	2.2410	14 58 35.1	8.031
13	2 23 30.23	2.2422	15 6 34.2	7.942
14	2 25 44.80	2.2434	15 14 28.0	7.852
15	2 27 59.44	2.2446	15 22 16.5	7.761
16	2 30 14.15	2.2458	15 29 59.6	7.670
17	2 32 28.93	2.2469	15 37 37.2	7.580
18	2 34 43.78	2.2480	15 45 9.4	7.459
19	2 36 58.69	2.2491	15 52 36.0	7.398
20	2 39 13.67	2.2502	15 59 57.1	7.306
21	2 41 28.72	2.2513	16 7 12.7	7.213
22	2 43 43.83	2.2524	16 14 22.6	7.119
23	2 45 59.01	2.2535	16 21 26.9	7.025
24	2 48 14.25	2.2545	N.16 28 25.5	6.930

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 29.					THURSDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 48 14.25	2.2545	N.16 28 25.5	6.930	0	3 42 36.31	2.2736	N.18 46 7.7	4.504
1	2 50 29.55	2.2555	16 35 18.3	6.833	1	3 44 52.73	2.2739	18 50 34.7	4 398
2	2 52 44.91	2.2566	16 42 5.4	6.737	2	3 47 9.17	2.2743	18 54 55.4	4.292
3	2 55 0.34	2.2576	16 48 46.8	6.641	3	3 49 25.64	2.2746	18 59 9.7	4.185
4	2 57 15.83	2.2586	16 55 22.3	6.544	4	3 51 42.12	2.2749	19 3 17.5	4.077
5	2 59 31.38	2.2597	17 1 52.0	6.447	5	3 53 58.62	2.2752	19 7 18.9	3.970
6	3 1 46.98	2.2607	17 8 15.9	6.349	6	3 56 15.15	2.2755	19 11 13.8	3.861
7	3 4 2.65	2.2617	17 14 33.8	6.250	7	3 58 31.69	2.2758	19 15 2.2	3.753
8	3 6 18.38	2.2626	17 20 45.8	6.151	8	4 0 48.24	2.2760	19 18 44.1	3.646
9	3 8 34.16	2.2635	17 26 51.9	6.051	9	4 3 4.80	2.2761	19 22 19.6	3.539
10	3 10 49.99	2.2643	17 32 51.9	5.950	10	4 5 21.36	2.2762	19 25 48.6	3.431
11	3 13 5.87	2.2651	17 38 45.9	5.849	11	4 7 37.93	2.2762	19 29 11.1	3.322
12	3 15 21.81	2.2659	17 44 33.8	5.749	12	4 9 54.50	2.2761	19 32 27.0	3.213
13	3 17 37.79	2.2667	17 50 15.7	5.648	13	4 12 11.05	2.2760	19 35 36.4	3.103
14	3 19 53.81	2.2675	17 55 51.5	5.546	14	4 14 27.60	2.2759	19 38 39.3	2.994
15	3 22 9.88	2.2683	18 1 21.2	5.443	15	4 16 44.14	2.2757	19 41 35.8	2.885
16	3 24 25.99	2.2690	18 6 44.7	5.340	16	4 19 0.67	2.2754	19 44 25.6	2.776
17	3 26 42.15	2.2697	18 12 2.0	5.237	17	4 21 17.19	2.2751	19 47 8.9	2.667
18	3 28 58.36	2.2703	18 17 13.1	5.133	18	4 23 33.69	2.2748	19 49 45.7	2.558
19	3 31 14.59	2.2709	18 22 17.9	5.028	19	4 25 50.17	2.2744	19 52 15.9	2.449
20	3 33 30.86	2.2715	18 27 16.4	4.923	20	4 28 6.63	2.2740	19 54 39.6	2.340
21	3 35 47.18	2.2721	18 32 8.7	4.818	21	4 30 23.06	2.2735	19 56 56.7	2.231
22	3 38 3.53	2.2727	18 36 54.7	4.714	22	4 32 39.46	2.2730	19 59 7.2	2.121
23	3 40 19.91	2.2732	18 41 34.4	4.609	23	4 34 55.83	2.2725	20 1 11.2	2.011
24	3 42 36.31	2.2736	N.18 46 7.7	4.504	24	4 37 12.18	2.2719	N.20 3 8.5	1.901

PHASES OF THE MOON.

	d	h	m
● New Moon, ...	3	23	40.1
☽ First Quarter, ...	11	23	47.9
○ Full Moon, ...	19	10	54.1
☾ Last Quarter, ...	26	2	15.2

	d	h
☾ Apogee, ...	10	3.4
☾ Perigee, ...	22	1.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Aquilæ	W.	93° 22′ 37″	2870	94° 55′ 34″	2880	96° 28′ 18″	2891	98° 0′ 49″	2901
	Fomalhaut	W.	65 0 2	3045	66 29 19	3038	67 58 45	3032	69 28 18	3027
	α Pegasi	W.	45 41 18	2760	47 16 38	2752	48 52 9	2745	50 27 49	2741
	Mars	W.	31 11 58	2782	32 46 50	2783	34 21 40	2786	35 56 26	2789
	Sun	E.	36 44 11	2790	35 9 30	2798	33 35 0	2808	32 0 42	2818
6	Sun	W.	23 56 52	3224	25 22 33	3234	26 48 2	3243	28 13 20	3253
	Regulus	E.	48 32 15	2897	46 59 52	2909	45 27 44	2921	43 55 52	2934
	Saturn	E.	91 57 15	2876	90 24 25	2886	88 51 48	2896	87 19 24	2906
	Spica	E.	102 11 12	2858	100 37 59	2869	99 5 0	2879	97 32 14	2888
7	Sun	W.	35 17 0	3301	36 41 10	3310	38 5 10	3319	39 28 59	3328
	Regulus	E.	36 20 32	2998	34 50 17	3013	33 20 20	3027	31 50 41	3043
	Saturn	E.	79 40 37	2956	78 9 29	2965	76 38 33	2974	75 7 48	2984
	Spica	E.	89 51 31	2937	88 19 59	2946	86 48 39	2955	85 17 30	2964
8	Sun	W.	46 25 35	3370	47 48 26	3377	49 11 9	3384	50 33 44	3390
	Regulus	E.	24 27 29	3184	23 0 1	3158	21 33 2	3187	20 6 37	3219
	Saturn	E.	67 36 49	3026	66 7 8	3033	64 37 36	3041	63 8 14	3048
	Spica	E.	77 44 22	3003	76 14 13	3010	74 44 13	3018	73 14 22	3023
	Jupiter	E.	105 35 18	2968	104 4 25	2975	102 33 41	2982	101 3 6	2989
9	Sun	W.	57 24 53	3418	58 46 49	3423	60 8 39	3427	61 30 25	3431
	Pollux	W.	27 24 35	3465	28 45 38	3431	30 7 20	3402	31 29 34	3379
	Saturn	E.	55 43 28	3079	54 14 53	3084	52 46 24	3090	51 18 2	3095
	Spica	E.	65 46 53	3050	64 17 42	3054	62 48 36	3057	61 19 34	3061
	Jupiter	E.	93 32 1	3015	92 2 7	3019	90 32 18	3023	89 2 34	3026
10	Sun	W.	68 18 24	3442	69 39 53	3443	71 1 21	3444	72 22 48	3443
	Pollux	W.	38 26 41	3293	39 51 1	3280	41 15 36	3269	42 40 24	3258
	Saturn	E.	43 57 36	3115	42 29 45	3119	41 1 58	3123	39 34 16	3126
	Spica	E.	53 55 20	3072	52 26 36	3073	50 57 53	3073	49 29 10	3073
	Jupiter	E.	81 34 48	3038	80 5 22	3039	78 35 57	3039	77 6 33	3039
	Antares	E.	99 23 39	3099	97 55 28	3099	96 27 17	3100	94 59 7	3099
11	Sun	W.	79 10 21	3435	80 31 58	3431	81 53 39	3428	83 15 24	3423
	Pollux	W.	49 47 23	3210	51 13 20	3202	52 39 27	3193	54 5 45	3184
	Saturn	E.	32 16 45	3143	30 49 28	3147	29 22 15	3152	27 55 8	3158
	Spica	E.	42 5 23	3065	40 36 31	3062	39 7 35	3059	37 38 35	3056
	Jupiter	E.	69 39 20	3032	68 9 47	3029	66 40 10	3026	65 10 29	3022
	Antares	E.	87 38 2	3091	86 9 42	3088	84 41 18	3086	83 12 51	3082
12	Sun	W.	90 5 32	3395	91 27 54	3387	92 50 25	3379	94 13 5	3372
	Pollux	W.	61 19 54	3138	62 47 17	3129	64 14 52	3119	65 42 39	3108
	Regulus	W.	24 17 55	3147	25 45 8	3127	27 12 45	3110	28 40 43	3094
	Spica	E.	30 12 12	3029	28 42 35	3022	27 12 50	3014	25 42 55	3007
	Jupiter	E	57 40 45	2997	56 10 28	2989	54 40 2	2983	53 9 28	2975
	Antares	E.	75 49 15	3066	74 20 12	3061	72 51 2	3043	71 21 43	3036
13	Sun	W.	101 8 56	3323	102 32 41	3312	103 56 39	3300	105 20 50	3288
	Pollux	W.	73 4 46	3054	74 33 52	3042	76 3 13	3030	77 32 48	3018
	Regulus	W.	36 5 16	3019	37 35 5	3005	39 5 11	2991	40 35 35	2977
	Spica	E.	18 10 45	2962	16 39 44	2961	15 8 30	2941	13 37 3	2930
	Jupiter	E.	45 34 3	2931	44 2 24	2921	42 30 32	2910	40 58 26	2900
	Antares	E	63 52 44	2994	62 22 24	2985	60 51 53	2975	59 21 9	2965

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	*a* Aquilæ	W.	99° 33′ 6″	2914	101° 5′ 7″	2927	102° 36′ 52″	2941	104° 8′ 19″	2956
	Fomalhaut	W.	70 57 57	3025	72 27 39	3023	73 57 23	3026	75 27 7	3024
	a Pegasi	W.	52 3 35	2738	53 39 25	2735	55 15 18	2734	56 51 13	2735
	Mars	W.	37 31 8	2793	39 5 45	2798	40 40 16	2804	42 14 39	2810
	Sun	E.	30 26 37	2828	28 52 45	2838	27 19 6	2848	25 45 40	2859
6	Sun	W.	29 38 27	3263	31 3 22	3272	32 28 6	3282	33 52 39	3292
	Regulus	E.	42 24 16	2946	40 52 56	2959	39 21 52	2972	37 51 4	2985
	Saturn	E.	85 47 13	2916	84 15 15	2927	82 43 30	2936	81 11 57	2946
	Spica	E.	95 59 40	2898	94 27 19	2909	92 55 11	2918	91 23 15	2927
7	Sun	W.	40 52 38	3337	42 16 7	3345	43 39 26	3354	45 2 35	3362
	Regulus	E.	30 21 21	3058	28 52 20	3075	27 23 40	3094	25 55 23	3113
	Saturn	E.	73 37 15	2993	72 6 53	3001	70 36 41	3009	69 6 40	3018
	Spica	E.	83 46 32	2972	82 15 44	2981	80 45 7	2989	79 14 40	2996
8	Sun	W.	51 56 12	3397	53 18 32	3403	54 40 45	3408	56 2 52	3414
	Regulus	E.	18 40 50	3257	17 15 48	3306	15 51 42	3365	14 28 46	3441
	Saturn	E.	61 39 1	3055	60 9 56	3061	58 40 59	3068	57 12 10	3073
	Spica	E.	71 44 38	3030	70 15 2	3035	68 45 33	3040	67 16 10	3045
	Jupiter	E.	99 32 39	2994	98 2 19	3001	96 32 7	3005	95 2 1	3010
9	Sun	W.	62 52 7	3434	64 13 45	3437	65 35 20	3438	66 56 53	3440
	Pollux	W.	32 52 15	3357	34 15 21	3338	35 38 49	3321	37 2 36	3306
	Saturn	E.	49 49 46	3100	48 21 36	3104	46 53 31	3108	45 25 31	3112
	Spica	E.	59 50 37	3065	58 21 44	3067	56 52 54	3069	55 24 6	3070
	Jupiter	E.	87 32 54	3030	86 3 18	3033	84 33 46	3034	83 4 16	3036
10	Sun	W.	73 44 16	3442	75 5 45	3441	76 27 15	3439	77 48 47	3438
	Pollux	W.	44 5 25	3247	45 30 38	3238	46 56 2	3229	48 21 37	3220
	Saturn	E.	38 6 38	3129	36 39 4	3132	35 11 33	3136	33 44 7	3139
	Spica	E.	48 0 27	3073	46 31 44	3071	45 2 59	3069	43 34 12	3068
	Jupiter	E.	75 37 8	3039	74 7 43	3038	72 38 17	3037	71 8 50	3024
	Antares	E.	93 30 56	3099	92 2 45	3098	90 34 33	3096	89 6 19	3094
11	Sun	W.	84 37 14	3419	85 59 9	3414	87 21 10	3408	88 43 18	3402
	Pollux	W.	55 32 13	3175	56 58 52	3166	58 25 42	3158	59 52 42	3148
	Saturn	E.	26 28 8	3165	25 1 17	3174	23 34 37	3185	22 8 10	3198
	Spica	E.	36 9 31	3051	34 40 21	3046	33 11 5	3040	31 41 42	3034
	Jupiter	E.	63 40 44	3018	62 10 53	3014	60 40 57	3009	59 10 55	3002
	Antares	E.	81 44 19	3078	80 15 42	3073	78 46 59	3068	77 18 10	3063
12	Sun	W.	95 35 54	3363	96 58 53	3353	98 22 3	3344	99 45 24	3334
	Pollux	W.	67 10 39	3098	68 38 51	3087	70 7 16	3077	71 35 54	3065
	Regulus	W.	30 9 0	3078	31 37 37	3063	33 6 32	3048	34 35 45	3034
	Spica	E.	24 12 51	2998	22 42 36	2990	21 12 11	2981	19 41 34	2971
	Jupiter	E	51 38 44	2967	50 7 50	2958	48 36 45	2950	47 5 30	2941
	Antares	E.	69 52 15	3028	68 22 37	3021	66 52 50	3012	65 22 52	3004
13	Sun	W.	106 45 15	3276	108 9 55	3264	109 34 49	3250	110 59 59	3236
	Pollux	W.	79 2 38	3006	80 32 44	2993	82 3 5	2980	83 33 43	2967
	Regulus	W.	42 6 17	2963	43 37 17	2948	45 8 35	2933	46 40 12	2919
	Spica	E.	12 5 22	2917	10 33 26	2906	9 1 16	2895	7 28 51	2883
	Jupiter	E.	39 26 7	2888	37 53 33	2877	36 20 45	2865	34 47 41	2852
	Antares	E	57 50 13	2955	56 19 4	2944	54 47 41	2934	53 16 5	2923

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
14	Sun	W.	112° 25′ 25″	3223	113° 51′ 7″	3209	115° 17′ 6″	3193	116° 43′ 23″	3179
	Pollux	W.	85 4 37	2953	86 35 49	2939	88 7 18	2926	89 39 4	2912
	Regulus	W.	48 12 7	2904	49 44 21	2889	51 16 54	2874	52 49 46	2859
	Jupiter	E.	33 14 21	2840	31 40 45	2827	30 6 52	2814	28 32 42	2800
	Antares	E.	51 44 15	2912	50 12 11	2900	48 39 52	2889	47 7 19	2877
	a Aquilæ	E.	103 23 9	3294	101 58 51	3276	100 34 12	3259	99 9 12	3242
15	Regulus	W.	60 39 9	2779	62 14 4	2763	63 49 20	2747	65 24 58	2731
	Saturn	W.	17 46 14	2975	19 16 58	2927	20 48 42	2885	22 21 20	2848
	Spica	W.	6 36 52	2755	8 12 19	2739	9 48 7	2723	11 24 16	2707
	Antares	E.	39 20 52	2821	37 46 52	2810	36 12 37	2801	34 38 10	2792
	a Aquilæ	E.	91 59 9	3158	90 32 9	3143	89 4 51	3127	87 37 14	3112
16	Regulus	W.	73 28 37	2647	75 6 28	2630	76 44 42	2613	78 23 19	2596
	Saturn	W.	30 14 59	2707	31 51 29	2684	33 28 31	2661	35 6 3	2639
	Spica	W.	19 30 30	2625	21 8 51	2608	22 47 35	2592	24 26 41	2575
	a Aquilæ	E.	80 14 49	3045	78 45 32	3034	77 16 1	3022	75 46 16	3013
	Fomalhaut	E.	108 52 38	3150	107 25 29	3124	105 57 49	3100	104 29 39	3076
17	Regulus	W.	86 42 8	2514	88 23 2	2498	90 4 18	2482	91 45 57	2466
	Saturn	W.	43 20 52	2539	45 1 11	2521	46 41 55	2502	48 23 5	2485
	Spica	W.	32 47 52	2493	34 29 15	2477	36 11 0	2461	37 53 8	2445
	a Aquilæ	E.	68 14 48	2977	66 44 6	2973	65 13 19	2971	63 42 30	2970
	Fomalhaut	E.	97 1 47	2968	95 30 54	2950	93 59 38	2931	92 27 59	2914
18	Saturn	W.	56 54 59	2402	58 38 31	2387	60 22 25	2371	62 6 41	2357
	Spica	W.	46 29 17	2370	48 13 35	2356	49 58 14	2342	51 43 13	2328
	Jupiter	W.	19 32 30	2351	21 17 15	2337	23 2 21	2322	24 47 48	2308
	a Aquilæ	E.	56 9 3	2999	54 38 49	3013	53 8 52	3030	51 39 16	3050
	Fomalhaut	E.	84 44 41	2844	83 11 10	2833	81 37 25	2823	80 3 27	2815
	a Pegasi	E.	101 55 16	2528	100 14 42	2512	98 33 46	2497	96 52 28	2482
19	Saturn	W.	70 53 2	2291	72 39 14	2279	74 25 44	2268	76 12 30	2256
	Spica	W.	60 32 58	2265	62 19 49	2254	64 6 56	2243	65 54 20	2233
	Jupiter	W.	33 39 59	2245	35 27 20	2233	37 14 58	2223	39 2 52	2212
	Antares	W.	16 15 6	2592	17 54 12	2524	19 34 52	2469	21 16 49	2424
	a Aquilæ	E.	44 19 28	3230	42 53 54	3286	41 29 26	3351	40 6 13	3426
	Fomalhaut	E.	72 11 26	2793	70 36 49	2793	69 2 12	2795	67 27 38	2799
	a Pegasi	E.	88 21 4	2418	86 37 55	2407	84 54 30	2397	83 10 51	2388
20	Saturn	W.	85 10 3	2212	86 58 12	2205	88 46 32	2198	90 35 2	2192
	Spica	W.	74 54 56	2188	76 43 42	2180	78 32 39	2174	80 21 46	2168
	Jupiter	W.	48 6 0	2168	49 55 16	2161	51 44 43	2154	53 34 20	2148
	Antares	W.	29 59 14	2290	31 45 28	2272	33 32 8	2257	35 19 11	2244
	Fomalhaut	E.	59 37 5	2855	58 3 48	2875	56 30 57	2898	54 58 35	2924
	a Pegasi	E.	74 29 41	2355	72 45 1	2350	71 0 15	2347	69 15 24	2346
	Mars	E.	100 36 31	2422	98 53 27	2414	97 10 12	2406	95 26 46	2399
21	Spica	W.	89 29 25	2144	91 19 17	2141	93 9 13	2139	94 59 13	2137
	Jupiter	W.	62 44 29	2125	64 34 50	2122	66 25 16	2120	68 15 45	2118
	Antares	W.	44 18 40	2197	46 7 12	2190	47 55 54	2186	49 44 43	2182
	Fomalhaut	E.	47 27 5	3131	45 59 33	3192	44 33 14	3260	43 8 16	3338
	a Pegasi	E.	60 31 0	2353	58 46 17	2357	57 1 41	2364	55 17 14	2373
	Mars	E.	86 47 27	2374	85 3 15	2371	83 18 58	2368	81 34 37	2366
	a Arietis	E.	103 23 53	2199	101 35 24	2198	99 46 50	2192	97 58 11	2190

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	Sun	W.	118° 9′ 57″	3164	119° 36′ 49″	3148	121° 4′ 0″	3133	122° 31′ 29″	3117
	Pollux	W.	91 11 8	2898	92 43 30	2883	94 16 10	2869	95 49 8	2855
	Regulus	W.	54 22 58	2843	55 56 30	2828	57 30 22	2811	59 4 35	2795
	Jupiter	E.	26 58 14	2786	25 23 28	2772	23 48 24	2759	22 13 2	2745
	Antares	E.	45 34 31	2866	44 1 28	2854	42 28 10	2843	40 54 38	2832
	a Aquilæ	E.	97 43 52	3224	96 18 11	3207	94 52 10	3190	93 25 49	3174
15	Regulus	W.	67 0 57	2714	68 37 18	2697	70 14 2	2681	71 51 8	2663
	Saturn	W.	23 54 45	2816	25 28 52	2785	27 3 39	2756	28 39 2	2732
	Spica	W.	13 0 47	2690	14 37 40	2674	16 14 55	2658	17 52 31	2641
	Antares	E.	33 3 32	2784	31 28 43	2776	29 53 44	2771	28 18 38	2767
	a Aquilæ	E.	86 9 19	3098	84 41 7	3083	83 12 37	3070	81 43 51	3057
16	Regulus	W.	80 2 19	2580	81 41 42	2563	83 21 28	2546	85 1 37	2530
	Saturn	W.	36 44 5	2618	38 22 36	2598	40 1 34	2577	41 41 0	2559
	Spica	W.	26 6 10	2559	27 46 1	2543	29 26 15	2526	31 6 52	2510
	a Aquilæ	E.	74 16 19	3003	72 46 10	2995	71 15 51	2988	69 45 23	2982
	Fomalhaut	E.	103 1 0	3052	101 31 52	3030	100 2 17	3009	98 32 15	2988
17	Regulus	W.	93 27 58	2450	95 10 21	2435	96 53 6	2420	98 36 12	2405
	Saturn	W.	50 4 40	2467	51 46 40	2450	53 29 4	2434	55 11 50	2418
	Spica	W.	39 35 38	2430	41 18 30	2415	43 1 44	2399	44 45 20	2384
	a Aquilæ	E.	62 11 40	2972	60 40 52	2975	59 10 8	2980	57 39 30	2989
	Fomalhaut	E.	90 55 58	2896	89 23 37	2883	87 50 56	2869	86 17 57	2855
18	Saturn	W.	63 51 18	2343	65 36 15	2329	67 21 32	2316	69 7 8	2304
	Spica	W.	53 28 32	2314	55 14 11	2302	57 0 8	2289	58 46 24	2277
	Jupiter	W.	26 33 36	2294	28 19 44	2281	30 6 11	2269	31 52 56	2257
	a Aquilæ	E.	50 10 5	3075	48 41 25	3105	47 13 21	3140	45 46 0	3181
	Fomalhaut	E.	78 29 18	2806	76 55 0	2801	75 20 34	2797	73 46 2	2794
	a Pegasi	E.	95 10 49	2468	93 28 51	2454	91 46 33	2441	90 3 57	2429
19	Saturn	W.	77 59 32	2247	79 46 49	2237	81 34 21	2229	83 22 6	2220
	Spica	W.	67 41 59	2223	69 29 53	2213	71 18 1	2204	73 6 22	2196
	Jupiter	W.	40 51 1	2202	42 39 25	2192	44 28 4	2184	46 16 56	2176
	Antares	W.	22 59 49	2389	24 43 40	2358	26 28 15	2332	28 13 28	2309
	a Aquilæ	E.	38 44 26	3515	37 24 19	3620	36 6 6	3740	34 50 1	3880
	Fomalhaut	E.	65 53 9	2805	64 18 48	2815	62 44 39	2825	61 10 43	2838
	a Pegasi	E.	81 26 59	2380	79 42 55	2371	77 58 39	2365	76 14 14	2359
20	Saturn	W.	92 23 41	2186	94 12 29	2181	96 1 25	2176	97 50 28	2172
	Spica	W.	82 11 2	2162	84 0 27	2157	85 49 59	2152	87 39 39	2148
	Jupiter	W.	55 24 6	2142	57 14 1	2137	59 4 4	2132	60 54 14	2129
	Antares	W.	37 6 33	2232	38 54 13	2221	40 42 9	2212	42 30 18	2204
	Fomalhaut	E.	53 26 47	2955	51 55 38	2991	50 25 14	3032	48 55 41	3078
	a Pegasi	E.	67 30 31	2345	65 45 37	2344	64 0 42	2346	62 15 49	2348
	Mars	E.	93 43 10	2393	91 59 25	2388	90 15 33	2382	88 31 33	2378
21	Spica	W.	96 49 16	2136	98 39 21	2135	100 29 27	2134	102 19 34	2135
	Jupiter	W.	70 6 17	2116	71 56 51	2116	73 47 26	2115	75 38 2	2116
	Antares	W.	51 33 38	2178	53 22 39	2175	55 11 44	2172	57 0 53	2171
	Fomalhaut	E.	41 44 49	3428	40 23 4	3529	39 3 12	3646	37 45 27	3781
	a Pegasi	E.	53 33 0	2382	51 49 0	2391	50 5 17	2409	48 21 55	2425
	Mars	E.	79 50 14	2365	78 5 49	2364	76 21 23	2361	74 36 56	2364
	a Arietis	E.	96 9 28	2188	94 20 43	2187	92 31 56	2186	90 43 8	2186

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	Jupiter	W.	77° 28′ 37″	2116	79° 19′ 11″	2118	81° 9′ 43″	2119	83° 0′ 13″	2122
	Antares	W.	58 50 4	2170	60 39 16	2170	62 28 28	2171	64 17 39	2172
	α Pegasi	E.	46 38 56	2444	44 56 24	2466	43 14 22	2490	41 32 55	2519
	Mars	E.	72 52 29	2365	71 8 4	2366	69 23 40	2368	67 39 19	2371
	α Arietis	E.	88 54 20	2188	87 5 34	2189	85 16 50	2190	83 28 8	2193
23	Jupiter	W.	92 11 35	2139	94 1 34	2145	95 51 25	2149	97 41 9	2156
	Antares	W.	73 22 51	2186	75 11 39	2190	77 0 21	2196	78 48 56	2200
	Mars	E.	58 58 44	2391	57 14 56	2396	55 31 15	2402	53 47 43	2408
	α Arietis	E.	74 25 55	2214	72 37 49	2220	70 49 52	2227	69 2 4	2234
	Sun	E.	131 16 45	2465	129 34 42	2470	127 52 46	2474	126 10 56	2480
24	Antares	W.	87 49 44	2232	89 37 24	2239	91 24 53	2247	93 12 10	2255
	α Aquilæ	W.	41 25 56	3239	42 51 19	3179	44 17 53	3126	45 45 31	3079
	Mars	E.	45 12 33	2448	43 30 6	2457	41 47 52	2466	40 5 51	2476
	α Arietis	E.	60 5 57	2277	58 19 23	2287	56 33 4	2298	54 47 1	2309
	Aldebaran	E.	93 2 17	2214	91 14 10	2222	89 26 15	2229	87 38 31	2237
	Sun	E.	117 43 53	2512	116 2 57	2520	114 22 12	2528	112 41 38	2536
25	α Aquilæ	W.	53 15 41	2935	54 47 28	2906	56 19 39	2880	57 52 11	2876
	Mars	E.	31 39 32	2535	29 59 7	2548	28 19 1	2564	26 39 16	2580
	α Arietis	E.	46 1 14	2376	44 17 5	2392	42 33 19	2408	40 49 56	2426
	Aldebaran	E.	78 42 53	2279	76 56 23	2289	75 10 7	2298	73 24 5	2307
	Sun	E.	104 21 45	2581	102 42 24	2591	101 3 16	2601	99 24 22	2610
26	α Aquilæ	W.	65 38 18	2836	67 11 56	2835	68 45 38	2834	70 19 22	2834
	Fomalhaut	W.	39 47 26	3684	41 4 30	3601	42 23 3	3530	43 42 54	3468
	α Arietis	E.	32 20 15	2544	30 40 3	2575	29 0 34	2611	27 21 54	2652
	Aldebaran	E.	64 37 23	2357	62 52 46	2366	61 8 23	2377	59 24 15	2387
	Sun	E.	91 13 16	2662	89 35 45	2672	87 58 28	2683	86 21 25	2693
27	α Aquilæ	W.	78 7 38	2848	79 41 4	2853	81 14 23	2859	82 47 34	2866
	Fomalhaut	W.	50 37 6	3263	52 2 12	3226	53 27 51	3201	54 53 59	3179
	α Pegasi	W.	30 33 33	3057	32 2 35	3008	33 32 38	2969	35 3 30	2936
	Aldebaran	E.	50 47 18	2440	49 4 40	2450	47 22 17	2461	45 40 9	2472
	Sun	E.	78 19 46	2747	76 44 9	2759	75 8 47	2769	73 33 39	2781
28	α Aquilæ	W.	90 31 4	2909	92 3 11	2920	93 35 4	2932	95 6 42	2944
	Fomalhaut	W.	62 9 59	3111	63 37 55	3103	65 6 1	3096	66 34 15	3092
	α Pegasi	W.	42 46 8	2840	44 19 44	2830	45 53 33	2822	47 27 32	2816
	Aldebaran	E.	37 13 22	2529	35 32 49	2540	33 52 32	2553	32 12 32	2566
	Sun	E.	65 41 34	2835	64 7 51	2846	62 34 23	2857	61 1 9	2867
29	Fomalhaut	W.	73 56 21	3086	75 24 48	3087	76 53 13	3090	78 21 35	3094
	α Pegasi	W.	55 18 47	2806	56 53 7	2807	58 27 26	2809	60 1 42	2811
	Mars	W.	21 8 55	2896	22 41 19	2897	24 13 42	2898	25 46 3	2901
	Aldebaran	E.	23 57 7	2638	22 19 4	2657	20 41 26	2677	19 4 15	2700
	Sun	E.	53 18 25	2922	51 46 34	2932	50 14 56	2944	48 43 33	2955
30	Fomalhaut	W.	85 42 3	3121	87 9 47	3129	88 37 21	3138	90 4 45	3147
	α Pegasi	W.	67 52 2	2831	69 25 49	2837	70 59 29	2843	72 33 1	2848
	Mars	W.	33 26 33	2927	34 58 17	2935	36 29 52	2941	38 1 19	2949
	α Arietis	W.	24 23 29	2962	25 54 30	2937	27 26 2	2917	28 57 59	2903
	Sun	E.	41 10 5	3011	39 40 6	3023	38 10 21	3034	36 40 51	3047

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	Jupiter W.	84° 50′ 39″	2124	86° 41′ 1″	2128	88° 31′ 18″	2131	90° 21′ 30″	2136
	Antares W.	66 6 48	2174	67 55 55	2176	69 44 58	2179	71 33 57	2182
	α Pegasi E.	39 52 8	2552	38 12 7	2590	36 32 58	2632	34 54 47	2684
	Mars E.	65 55 2	2373	64 10 49	2376	62 26 42	2381	60 42 40	2385
	α Arietis E.	81 39 30	2196	79 50 57	2200	78 2 30	2204	76 14 9	2209
23	Jupiter W.	99 30 44	2161	101 20 10	2167	103 9 27	2174	104 58 34	2180
	Antares W.	80 37 23	2206	82 25 42	2212	84 13 52	2218	86 1 53	2225
	Mars E.	52 4 20	2415	50 21 7	2422	48 38 4	2431	46 55 13	2438
	α Arietis E.	67 14 27	2241	65 27 1	2249	63 39 47	2258	61 52 45	2267
	Sun E.	124 29 14	2485	122 47 40	2492	121 6 15	2498	119 24 59	2505
24	Antares W.	94 59 16	2263	96 46 10	2272	98 32 51	2280	100 19 20	2289
	α Aquilæ W.	47 14 6	3039	48 43 31	3004	50 13 39	2975	51 44 23	2948
	Mars E.	38 24 4	2487	36 42 32	2497	35 1 15	2510	33 20 15	2522
	α Arietis E.	53 1 15	2321	51 15 46	2334	49 30 36	2347	47 45 45	2361
	Aldebaran E.	85 50 59	2245	84 3 39	2253	82 16 31	2262	80 29 36	2270
	Sun E.	111 1 15	2545	109 21 4	2553	107 41 5	2563	106 1 19	2572
25	α Aquilæ W.	59 25 0	2865	60 58 4	2855	62 31 20	2848	64 4 45	2842
	Mars E.	24 59 53	2597	23 20 54	2617	21 42 22	2639	20 4 20	2665
	α Arietis E.	39 6 59	2446	37 24 30	2468	35 42 32	2491	34 1 6	2516
	Aldebaran E.	71 38 16	2317	69 52 41	2327	68 7 21	2337	66 22 15	2346
	Sun E.	97 45 41	2621	96 7 14	2631	94 29 1	2640	92 51 1	2652
26	α Aquilæ W.	71 53 6	2835	73 26 49	2837	75 0 29	2839	76 34 6	2843
	Fomalhaut W.	45 3 54	3413	46 25 56	3365	47 48 53	3323	49 12 38	3286
	α Arietis E.	25 44 9	2693	24 7 27	2754	22 31 59	2821	20 57 58	2896
	Aldebaran E.	57 40 22	2398	55 56 44	2408	54 13 20	2418	52 30 11	2429
	Sun E.	84 44 36	2704	83 8 2	2715	81 31 42	2726	79 55 37	2737
27	α Aquilæ W.	84 20 37	2873	85 53 30	2881	87 26 13	2890	88 58 45	2900
	Fomalhaut W.	56 20 33	3161	57 47 29	3146	59 14 43	3132	60 42 14	3120
	α Pegasi W.	36 35 3	2909	38 7 11	2886	39 39 48	2868	41 12 48	2852
	Aldebaran E.	43 58 16	2483	42 16 39	2494	40 35 17	2506	38 54 12	2517
	Sun E.	71 58 46	2792	70 24 7	2802	68 49 42	2813	67 15 31	2824
28	α Aquilæ W.	96 38 5	2956	98 9 13	2968	99 40 4	2982	101 10 39	2997
	Fomalhaut W.	68 2 34	3088	69 30 58	3086	70 59 25	3085	72 27 53	3086
	α Pegasi W.	49 1 39	2811	50 35 52	2809	52 10 8	2807	53 44 27	2806
	Aldebaran E.	30 32 50	2579	28 53 26	2592	27 14 20	2606	25 35 33	2621
	Sun E.	59 28 8	2878	57 55 21	2889	56 22 48	2901	54 50 30	2911
29	Fomalhaut W.	79 49 52	3097	81 18 5	3103	82 46 11	3108	84 14 11	3114
	α Pegasi W.	61 35 55	2815	63 10 4	2818	64 44 9	2821	66 18 9	2827
	Mars W.	27 18 21	2905	28 50 34	2909	30 22 41	2915	31 54 41	2921
	Aldebaran E.	17 27 35	2728	15 51 32	2763	14 16 15	2807	12 41 56	2864
	Sun E.	47 12 24	2965	45 41 28	2977	44 10 46	2988	42 40 18	3000
30	Fomalhaut W.	91 31 58	3156	92 59 0	3167	94 25 49	3178	95 52 25	3188
	α Pegasi W.	74 6 26	2855	75 39 43	2862	77 12 51	2869	78 45 50	2876
	Mars W.	39 32 36	2957	41 3 43	2965	42 34 40	2972	44 5 28	2980
	α Arietis W.	30 30 15	2891	32 2 45	2883	33 35 26	2876	35 8 15	2873
	Sun E.	35 11 36	3059	33 42 36	3071	32 13 51	3084	30 45 22	3097

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Fri.	1	6 42 44.32	10.337	N.23 5 27.5	10.55	15 46.10	68.76	3 33.91	0.480
Sat.	2	6 46 52.32	10.326	23 1 1.9	11.56	15 46.09	68.72	3 45.32	0.469
Sun.	3	6 51 0.04	10.314	22 56 12.0	12.56	15 46.09	68.68	3 56.46	0.457
Mon.	4	6 55 7.46	10.301	22 50 58.3	13.56	15 46.09	68.64	4 7.29	0.444
Tues.	5	6 59 14.56	10.288	22 45 20.8	14.55	15 46.10	68.59	4 17.80	0.430
Wed.	6	7 3 21.32	10.273	22 39 19.6	15.53	15 46.12	68.54	4 27.97	0.415
Thur.	7	7 7 27.70	10.257	22 32 54.9	16.51	15 46.15	68.49	4 37.77	0.399
Fri.	8	7 11 33.69	10.240	22 26 6.9	17.48	15 46.18	68.44	4 47.18	0.383
Sat.	9	7 15 39.25	10.223	22 18 55.6	18.44	15 46.21	68.38	4 56.16	0.365
Sun.	10	7 19 44.38	10.204	22 11 21.2	19.40	15 46.25	68.32	5 4.71	0.347
Mon.	11	7 23 49.06	10.185	22 3 24.0	20.35	15 46.30	68.26	5 12.81	0.328
Tues.	12	7 27 53.27	10.165	21 55 4.1	21.29	15 46.35	68.20	5 20.45	0.308
Wed.	13	7 31 57.00	10.144	21 46 21.7	22.22	15 46.40	68.13	5 27.61	0.288
Thur.	14	7 36 0.23	10.123	21 37 17.0	23.15	15 46.46	68.06	5 34.25	0.267
Fri.	15	7 40 2.96	10.102	21 27 50.3	24.07	15 46.52	67.99	5 40.41	0.246
Sat.	16	7 44 5.17	10.080	21 18 1.8	24.98	15 46.58	67.92	5 46.05	0.224
Sun.	17	7 48 6.85	10.058	21 7 51.5	25.88	15 46.64	67.85	5 51.16	0.202
Mon.	18	7 52 7.98	10.036	20 57 19.6	26.77	15 46.71	67.78	5 55.73	0.179
Tues.	19	7 56 8.57	10.014	20 46 26.6	27.65	15 46.79	67.70	5 59.75	0.157
Wed.	20	8 0 8.63	9.991	20 35 12.5	28.52	15 46.87	67.62	6 3.24	0.134
Thur.	21	8 4 8.14	9.968	20 23 37.6	29.38	15 46.95	67.54	6 6.18	0.111
Fri.	22	8 8 7.07	9.944	20 11 42.0	30.23	15 47.03	67.46	6 8.55	0.087
Sat.	23	8 12 5.44	9.921	19 59 26.3	31.07	15 47.12	67.38	6 10.36	0.064
Sun.	24	8 16 3.24	9.897	19 46 50.6	31.90	15 47.21	67.29	6 11.60	0.040
Mon.	25	8 20 0.47	9.873	19 33 54.9	32.72	15 47.31	67.21	6 12.28	0.017
Tues.	26	8 23 57.13	9.849	19 20 39.6	33.53	15 47.41	67.13	6 12.39	0.007
Wed.	27	8 27 53.22	9.825	19 7 5.1	34.33	15 47.51	67.05	6 11.93	0.031
Thur.	28	8 31 48.73	9.801	18 53 11.6	35.12	15 47.61	66.97	6 10.88	0.055
Fri.	29	8 35 43.65	9.771	18 38 59.4	35.89	15 47.72	66.87	6 9.25	0.079
Sat.	30	8 39 37.98	9.752	18 24 28.7	36.65	15 47.84	66.78	6 7.03	0.104
Sun.	31	8 43 31.71	9.728	18 9 39.8	37.40	15 47.96	66.70	6 4.22	0.129
Mon.	32	8 47 24.85	9.703	N.17 54 33.2	38.14	15 48.08	66.61	6 0.81	0.154

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Fri.	1	6 42 43.70	10.337	N.23 5 28.2	10.55	3 33.88	0.480	6 39 9.82
Sat.	2	6 46 51.67	10.326	23 1 2.7	11.56	3 45.29	0.469	6 43 6.38
Sun.	3	6 50 59.36	10.314	22 56 12.9	12.56	3 56.43	0.457	6 47 2.93
Mon.	4	6 55 6.75	10.301	22 50 59.3	13.56	4 7.26	0.447	6 50 59.49
Tues.	5	6 59 13.82	10.288	22 45 21.9	14.55	4 17.77	0.430	6 54 56.05
Wed.	6	7 3 20.55	10.273	22 39 21.1	15.53	4 27.94	0.415	6 58 52.61
Thur.	7	7 7 26.90	10.257	22 32 56.2	16.51	4 37.74	0.399	7 2 49.16
Fri.	8	7 11 32.87	10.240	22 26 8.3	17.48	4 47.15	0.383	7 6 45.72
Sat.	9	7 15 38.41	10.223	22 18 57.2	18.44	4 56.14	0.365	7 10 42.27
Sun.	10	7 19 43.52	10.204	22 11 22.9	19.40	5 4.69	0.347	7 14 38.83
Mon.	11	7 23 48.18	10.185	22 3 25.8	20.35	5 12.79	0.328	7 18 35.39
Tues.	12	7 27 52.37	10.165	21 56 6.0	21.29	5 20.43	0.308	7 22 31.94
Wed.	13	7 31 56.08	10.144	21 46 23.8	22.22	5 27.58	0.288	7 26 28.50
Thur.	14	7 35 59.29	10.123	21 37 19.2	23.15	5 34.23	0.267	7 30 25.06
Fri.	15	7 40 2.00	10.102	21 27 52.6	24.07	5 40.39	0.246	7 34 21.61
Sat.	16	7 44 4.20	10.080	21 18 4.2	24.98	5 46.03	0.224	7 38 18.17
Sun.	17	7 48 5.87	10.058	21 7 54.0	25.88	5 51.15	0.202	7 42 14.72
Mon.	18	7 52 6.99	10.036	20 57 22.2	26.77	5 55.71	0.179	7 46 11.28
Tues.	19	7 56 7.57	10.014	20 46 29.3	27.65	5 59.73	0.157	7 50 7.84
Wed.	20	8 0 7.62	9.991	20 35 15.4	28.52	6 3.23	0.134	7 54 4.39
Thur.	21	8 4 7.12	9.968	20 23 40.6	29.38	6 6.17	0.111	7 58 0.95
Fri.	22	8 8 6.05	9.944	20 11 45.1	30.23	6 8.55	0.087	8 1 57.50
Sat.	23	8 12 4.42	9.921	19 59 29.5	31.07	6 10.36	0.064	8 5 54.06
Sun.	24	8 16 2.22	9.897	19 46 53.9	31.90	6 11.60	0.040	8 9 50.62
Mon.	25	8 19 59.45	9.873	19 33 58.3	32.72	6 12.28	0.017	8 13 47.17
Tues.	26	8 23 56.11	9.849	19 20 43.1	33.53	6 12.38	0.007	8 17 43.73
Wed.	27	8 27 52.21	9.825	19 7 8.7	34.33	6 11.93	0.031	8 21 40.28
Thur.	28	8 31 47.72	9.801	18 53 15.3	35.12	6 10.88	0.055	8 25 36.84
Fri.	29	8 35 42.65	9.777	18 39 3.1	35.89	6 9.26	0.079	8 29 33.39
Sat.	30	8 39 36.99	9.752	18 24 32.5	36.65	6 7.04	0.104	8 33 29.95
Sun.	31	8 43 30.73	9.728	18 9 43.7	37.40	6 4.22	0.129	8 37 26.51
Mon.	32	8 47 23.88	9.703	N.17 54 37.1	38.14	6 0.82	0.154	8 41 23.06

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	183	99 49 22.3	48 44.2	143.03	—0.54	0.0072426	1.4	17 17 59.67
2	184	100 46 35.1	45 56.8	143.03	0.66	.0072447	0.3	17 14 3.76
3	185	101 43 47.9	43 9.5	143.03	0.76	.0072442	0.7	17 10 7.84
4	186	102 41 0.8	40 22.3	143.04	0.84	.0072411	1.8	17 6 11.93
5	187	103 38 13.8	37 35.2	143.04	0.89	.0072355	2.9	17 2 16.02
6	188	104 35 26.9	34 48.2	143.04	0.91	.0072272	4.0	16 58 20.11
7	189	105 32 40.0	32 1.1	143.04	0.90	.0072162	5.1	16 54 24.20
8	190	106 29 53.1	29 14.0	143.04	0.86	.0072027	6.1	16 50 28.29
9	191	107 27 6.1	26 26.8	143.04	0.79	.0071867	7.1	16 46 32.38
10	192	108 24 19.1	23 39.6	143.04	0.70	.0071683	8.1	16 42 36.47
11	193	109 21 32.2	20 52.5	143.04	0.57	.0071478	9.0	16 38 40.56
12	194	110 18 45.3	18 5.4	143.04	0.44	.0071252	9.8	16 34 44.65
13	195	111 15 58.4	15 18.4	143.04	0.31	.0071006	10.6	16 30 48.73
14	196	112 13 11.5	12 31.4	143.05	0.19	.0070742	11.3	16 26 52.82
15	197	113 10 24.9	9 44.6	143.06	—0.07	.0070461	12.0	16 22 56.91
16	198	114 7 38.5	6 58.0	143.07	+0.05	.0070165	12.6	16 19 1.00
17	199	115 4 52.5	4 11.8	143.08	0.15	.0070856	13.2	16 15 5.09
18	200	116 2 6.8	1 26.0	143.10	0.23	.0069532	13.8	16 11 9.18
19	201	116 59 21.5	58 40.6	143.12	0.28	.0069194	14.4	16 7 13.27
20	202	117 56 36.8	55 55.7	143.15	0.29	.0068842	15.0	16 3 17.36
21	203	118 53 52.8	53 11.5	143.18	0.27	.0068476	15.5	15 59 21.45
22	204	119 51 9.5	50 28.1	143.21	0.23	.0068096	16.1	15 55 25.54
23	205	120 48 27.1	47 45.6	143.25	0.16	.0067701	16.7	15 51 29.63
24	206	121 45 45.6	45 4.0	143.29	+0.07	.0067291	17.4	15 47 33.72
25	207	122 43 5.0	42 23.2	143.33	—0.05	.0066864	18.1	15 43 37.81
26	208	123 40 25.4	39 43.4	143.37	0.17	.0066418	18.9	15 39 41.90
27	209	124 37 46.8	37 4.7	143.41	0.29	.0065953	19.7	15 35 45.99
28	210	125 35 9.3	34 27.1	143.46	0.41	.0065468	20.6	15 31 50.09
29	211	126 32 33.0	31 50.7	143.50	0.53	.0064962	21.5	15 27 54.18
30	212	127 29 57.8	29 15.3	143.55	0.64	.0064434	22.5	15 23 58.27
31	213	128 27 23.7	26 41.0	143.59	0.73	.0063882	23.4	15 20 2.36
32	214	129 24 50.5	24 7.7	143.64	—0.79	0.0063306	24.4	15 16 6.45

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 21.2	15 17.2	56 14.2	−1.26	55 59.3	−1.22	22 45.8	2.16	27.0
2	15 13.2	15 9.5	55 44.9	1.18	55 31.0	1.13	23 36.8	2.09	28.0
3	15 5.8	15 2.4	55 17.8	1.08	55 5.2	1.02	δ		29.0
4	14 59.2	14 56.3	54 53.5	0.94	54 42.6	0.86	0 26.1	2.01	0.5
5	14 53.6	14 51.2	54 32.8	0.77	54 24.1	0.67	1 13.3	1.92	1.5
6	14 49.2	14 47.6	54 16.8	0.55	54 11.0	0.42	1 58.4	1.84	2.5
7	14 46.5	14 45.9	54 6.8	−0.27	54 4.4	−0.11	2 41.8	1.78	3.5
8	14 45.8	14 46.3	54 4.1	+0.06	54 5.8	+0.24	3 24.0	1.74	4.5
9	14 47.4	14 49.1	54 9.9	0.43	54 16.2	0.63	4 5.6	1.74	5.5
10	14 51.5	14 54.5	54 25.0	0.83	54 36.2	1.04	4 47.6	1.76	6.5
11	14 58.2	15 2.6	54 49.9	1.24	55 6.0	1.44	5 30.6	1.83	7.5
12	15 7.7	15 13.3	55 24.4	1.63	55 45.1	1.81	6 15.6	1.93	8.5
13	15 19.5	15 26.2	56 7.8	1.97	56 32.4	2.11	7 3.4	2.06	9.5
14	15 33.2	15 40.6	56 58.4	2.22	57 25.5	2.29	7 54.5	2.20	10.5
15	15 48.2	15 55.8	57 53.3	2.33	58 21.2	2.31	8 49.1	2.34	11.5
16	16 3.3	16 10.4	58 48.6	2.25	59 15.0	2.13	9 46.6	2.45	12.5
17	16 17.1	16 23.1	59 39.5	1.95	60 1.6	1.73	10 46.1	2.50	13.5
18	16 28.3	16 32.6	60 20.7	1.45	60 36.3	1.14	11 46.0	2.48	14.5
19	16 35.7	16 37.7	60 47.9	0.79	60 55.2	+0.43	12 44.8	2.42	15.5
20	16 38.5	16 38.1	60 58.2	+0.06	60 56.7	−0.30	13 41.8	2.33	16.5
21	16 36.6	16 33.9	60 51.0	−0.64	60 41.3	0.96	14 36.8	2.25	17.5
22	16 30.3	16 25.9	60 28.1	1.24	60 11.9	1.47	15 30.1	2.20	18.5
23	16 20.8	16 15.2	59 53.1	1.65	59 32.5	1.78	16 22.4	2.17	19.5
24	16 9.2	16 3.0	59 10.5	1.87	58 47.7	1.92	17 14.3	2.16	20.5
25	15 56.7	15 50.4	58 24.5	1.93	58 1.4	1.91	18 6.2	2.17	21.5
26	15 44.2	15 38.2	57 38.7	1.87	57 16.7	1.80	18 58.3	2.17	22.5
27	15 32.5	15 27.0	56 55.6	1.72	56 35.4	1.63	19 50.4	2.17	23.5
28	15 21.8	15 16.9	56 16.4	1.54	55 58.6	1.44	20 42.2	2.14	24.5
29	15 12.4	15 8.2	55 41.9	1.33	55 26.5	1.23	21 33.1	2.09	25.5
30	15 4.4	15 0.8	55 12.4	1.13	54 59.4	1.03	22 22.5	2.02	26.5
31	14 57.7	14 54.8	54 47.7	0.93	54 37.2	0.83	23 10.0	1.94	27.5
32	14 52.3	14 50.0	54 27.9	−0.73	54 19.8	−0.63	23 55.7	1.86	28.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	4 37 12.18	2.2719	N.20 3 8.5	1.901
1	4 39 28.49	2.2713	20 4 58.9	1.790
2	4 41 44.75	2.2706	20 6 43.0	1.680
3	4 44 0.97	2.2699	20 8 20.5	1.570
4	4 46 17.14	2.2691	20 9 51.4	1.460
5	4 48 33.26	2.2682	20 11 15.7	1.351
6	4 50 49.33	2.2673	20 12 33.5	1.242
7	4 53 5.34	2.2664	20 13 44.7	1.132
8	4 55 21.30	2.2654	20 14 49.4	1.023
9	4 57 37.20	2.2644	20 15 47.5	0.913
10	4 59 53.03	2.2633	20 16 39.0	0.803
11	5 2 8.80	2.2622	20 17 23.9	0.694
12	5 4 24.49	2.2610	20 18 2.3	0.585
13	5 6 40.11	2.2597	20 18 34.2	0.477
14	5 8 55.65	2.2584	20 18 59.5	0.368
15	5 11 11.12	2.2571	20 19 18.3	0.259
16	5 13 26.50	2.2557	20 19 30.6	0.151
17	5 15 41.79	2.2542	20 19 36.4	0.043
18	5 17 57.00	2.2527	20 19 35.7	0.065
19	5 20 12.12	2.2512	20 19 28.6	0.172
20	5 22 27.14	2.2496	20 19 15.0	0.280
21	5 24 42.07	2.2479	20 18 55.0	0.387
22	5 26 56.89	2.2462	20 18 28.5	0.494
23	5 29 11.61	2.2444	N.20 17 55.6	0.601

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 31 26.22	2.2426	N.20 17 16.4	0.707
1	5 33 40.73	2.2408	20 16 30.8	0.813
2	5 35 55.12	2.2389	20 15 38.8	0.919
3	5 38 9.40	2.2370	20 14 40.5	1.025
4	5 40 23.56	2.2350	20 13 35.8	1.130
5	5 42 37.60	2.2330	20 12 24.9	1.234
6	5 44 51.52	2.2309	20 11 7.7	1.339
7	5 47 5.31	2.2288	20 9 44.2	1.443
8	5 49 18.98	2.2267	20 8 14.5	1.547
9	5 51 32.52	2.2245	20 6 38.6	1.650
10	5 53 45.92	2.2222	20 4 56.5	1.753
11	5 55 59.18	2.2199	20 3 8.2	1.856
12	5 58 12.31	2.2176	20 1 13.8	1.958
13	6 0 25.29	2.2152	19 59 13.2	2.060
14	6 2 38.13	2.2128	19 57 6.6	2.161
15	6 4 50.82	2.2103	19 54 53.9	2.262
16	6 7 3.37	2.2078	19 52 35.2	2.362
17	6 9 15.77	2.2053	19 50 10.4	2.462
18	6 11 28.01	2.2028	19 47 39.7	2.561
19	6 13 40.10	2.2002	19 45 3.1	2.660
20	6 15 52.03	2.1975	19 42 20.5	2.759
21	6 18 3.80	2.1948	19 39 32.0	2.857
22	6 20 15.40	2.1921	19 36 37.7	2.954
23	6 22 26.84	2.1893	19 33 37.6	3.051
24	6 24 38.12	2.1865	N.19 30 31.6	3.147

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 24 38.12	2.1865	N.19 30 31.6	3.147
1	6 26 49.23	2.1837	19 27 19.9	3.243
2	6 29 0.17	2.1809	19 24 2.4	3.339
3	6 31 10.94	2.1780	19 20 39.2	3.434
4	6 33 21.53	2.1751	19 17 10.3	3.528
5	6 35 31.94	2.1721	19 13 35.8	3.622
6	6 37 42.18	2.1692	19 9 55.7	3.715
7	6 39 52.24	2.1662	19 6 10.1	3.807
8	6 42 2.12	2.1632	19 2 18.9	3.899
9	6 44 11.82	2.1601	18 58 22.2	3.990
10	6 46 21.33	2.1570	18 54 20.1	4.081
11	6 48 30.66	2.1539	18 50 12.5	4.172
12	6 50 39.80	2.1508	18 45 59.5	4.261
13	6 52 48.75	2.1477	18 41 41.2	4.350
14	6 54 57.52	2.1445	18 37 17.5	4.438
15	6 57 6.10	2.1413	18 32 48.6	4.526
16	6 59 14.48	2.1380	18 28 14.4	4.613
17	7 1 22.67	2.1348	18 23 35.0	4.699
18	7 3 30.66	2.1316	18 18 50.5	4.785
19	7 5 38.46	2.1284	18 14 0.8	4.870
20	7 7 46.07	2.1251	18 9 6.1	4.954
21	7 9 53.48	2.1218	18 4 6.3	5.038
22	7 12 0.69	2.1185	17 59 1.5	5.122
23	7 14 7.70	2.1152	N.17 53 51.7	5.205

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 16 14.51	2.1119	N.17 48 36.9	5.287
1	7 18 21.12	2.1085	17 43 17.3	5.368
2	7 20 27.53	2.1052	17 37 52.8	5.448
3	7 22 33.74	2.1018	17 32 23.5	5.528
4	7 24 39.75	2.0985	17 26 49.4	5.607
5	7 26 45.56	2.0951	17 21 10.6	5.684
6	7 28 51.16	2.0917	17 15 27.2	5.763
7	7 30 56.56	2.0883	17 9 39.1	5.840
8	7 33 1.76	2.0849	17 3 46.4	5.917
9	7 35 6.75	2.0815	16 57 49.1	5.993
10	7 37 11.54	2.0781	16 51 47.3	6.068
11	7 39 16.13	2.0747	16 45 41.0	6.142
12	7 41 20.51	2.0713	16 39 30.3	6.215
13	7 43 24.69	2.0680	16 33 15.2	6.288
14	7 45 28.67	2.0646	16 26 55.7	6.360
15	7 47 32.44	2.0612	16 20 31.9	6.432
16	7 49 36.01	2.0578	16 14 3.8	6.503
17	7 51 39.38	2.0544	16 7 31.5	6.573
18	7 53 42.54	2.0510	16 0 55.0	6.642
19	7 55 45.50	2.0476	15 54 14.4	6.711
20	7 57 48.25	2.0442	15 47 29.7	6.779
21	7 59 50.81	2.0409	15 40 40.9	6.847
22	8 1 53.16	2.0375	15 33 48.1	6.913
23	8 3 55.31	2.0342	15 26 51.3	6.979
24	8 5 57.26	2.0308	N.15 19 50.6	7.044

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 5 57.26	2.0308	N.15 19 50.6	7.044
1	8 7 59.01	2.0275	15 12 46.0	7.108
2	8 10 0.56	2.0242	15 5 37.6	7.172
3	8 12 1.91	2.0209	14 58 25.3	7.236
4	8 14 3.07	2.0176	14 51 9.3	7.298
5	8 16 4.03	2.0144	14 43 49.5	7.360
6	8 18 4.80	2.0111	14 36 26.1	7.421
7	8 20 5.37	2.0078	14 28 59.0	7.481
8	8 22 5.74	2.0046	14 21 28.4	7.540
9	8 24 5.92	2.0014	14 13 54.2	7.599
10	8 26 5.91	1.9982	14 6 16.5	7.657
11	8 28 5.71	1.9950	13 58 35.4	7.714
12	8 30 5.31	1.9919	13 50 50.8	7.771
13	8 32 4.73	1.9888	13 43 2.8	7.827
14	8 34 3.96	1.9857	13 35 11.5	7.882
15	8 36 3.01	1.9826	13 27 16.9	7.937
16	8 38 1.87	1.9795	13 19 19.0	7.991
17	8 40 0.55	1.9764	13 11 17.9	8.044
18	8 41 59.04	1.9733	13 3 13.7	8.097
19	8 43 57.35	1.9703	12 55 6.3	8.149
20	8 45 55.48	1.9673	12 46 55.8	8.200
21	8 47 53.43	1.9644	12 38 42.3	8.251
22	8 49 51.21	1.9615	12 30 25.7	8.300
23	8 51 48.81	1.9586	N.12 22 6.2	8.349

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 53 46.24	1.9557	N.12 13 43.8	8.398
1	8 55 43.50	1.9529	12 5 18.5	8.446
2	8 57 40.59	1.9501	11 56 50.3	8.493
3	8 59 37.51	1.9473	11 48 19.3	8.539
4	9 1 34.26	1.9446	11 39 45.6	8.585
5	9 3 30.85	1.9418	11 31 9.1	8.630
6	9 5 27.28	1.9391	11 22 30.0	8.674
7	9 7 23.54	1.9364	11 13 48.3	8.718
8	9 9 19.65	1.9338	11 5 3.9	8.760
9	9 11 15.60	1.9312	10 56 17.0	8.803
10	9 13 11.39	1.9286	10 47 27.5	8.845
11	9 15 7.03	1.9261	10 38 35.5	8.887
12	9 17 2.52	1.9236	10 29 41.1	8.927
13	9 18 57.86	1.9211	10 20 44.3	8.966
14	9 20 53.05	1.9187	10 11 45.2	9.005
15	9 22 48.10	1.9163	10 2 43.7	9.044
16	9 24 43.00	1.9139	9 53 39.9	9.082
17	9 26 37.76	1.9116	9 44 33.9	9.119
18	9 28 32.39	1.9093	9 35 25.6	9.156
19	9 30 26.88	1.9070	9 26 15.2	9.192
20	9 32 21.23	1.9048	9 17 2.6	9.227
21	9 34 15.45	1.9026	9 7 47.9	9.262
22	9 36 9.54	1.9005	8 58 31.2	9.295
23	9 38 3.51	1.8984	8 49 12.5	9.328
24	9 39 57.35	1.8963	N. 8 39 51.8	9.361

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 39 57.35	1.8963	N. 8 39 51.8	9.361
1	9 41 51.07	1.8943	8 30 29.1	9.394
2	9 43 44.67	1.8923	8 21 4.5	9.425
3	9 45 38.15	1.8903	8 11 38.1	9.456
4	9 47 31.51	1.8884	8 2 9.8	9.486
5	9 49 24.76	1.8866	7 52 39.7	9.516
6	9 51 17.90	1.8848	7 43 7.9	9.545
7	9 53 10.94	1.8831	7 33 34.3	9.573
8	9 55 3.87	1.8814	7 23 59.1	9.601
9	9 56 56.70	1.8797	7 14 22.2	9.628
10	9 58 49.43	1.8780	7 4 43.7	9.655
11	10 0 42.06	1.8763	6 55 3.6	9.681
12	10 2 34.59	1.8747	6 45 22.0	9.706
13	10 4 27.03	1.8732	6 35 38.9	9.731
14	10 6 19.38	1.8718	6 25 54.3	9.755
15	10 8 11.65	1.8704	6 16 8.2	9.779
16	10 10 3.83	1.8690	6 6 20.8	9.802
17	10 11 55.93	1.8677	5 56 32.0	9.824
18	10 13 47.95	1.8664	5 46 41.9	9.846
19	10 15 39.90	1.8652	5 36 50.5	9.867
20	10 17 31.77	1.8640	5 26 57.8	9.888
21	10 19 23.57	1.8628	5 17 3.9	9.908
22	10 21 15.30	1.8617	5 7 8.8	9.928
23	10 23 6.97	1.8606	N. 4 57 12.6	9.947

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 24 58.57	1.8596	N. 4 47 15.2	9.965
1	10 26 50.12	1.8587	4 37 16.7	9.983
2	10 28 41.61	1.8577	4 27 17.2	10.000
3	10 30 33.05	1.8568	4 17 16.7	10.017
4	10 32 24.43	1.8560	4 7 15.2	10.033
5	10 34 15.77	1.8552	3 57 12.8	10.048
6	10 36 7.06	1.8545	3 47 9.4	10.063
7	10 37 58.31	1.8539	3 37 5.1	10.078
8	10 39 49.53	1.8533	3 27 0.0	10.092
9	10 41 40.71	1.8527	3 16 54.0	10.106
10	10 43 31.85	1.8522	3 6 47.3	10.118
11	10 45 22.96	1.8517	2 56 39.9	10.130
12	10 47 14.05	1.8512	2 46 31.7	10.141
13	10 49 5.11	1.8508	2 36 22.9	10.152
14	10 50 56.15	1.8505	2 26 13.4	10.163
15	10 52 47.17	1.8502	2 16 3.3	10.173
16	10 54 38.18	1.8500	2 5 52.6	10.182
17	10 56 29.18	1.8499	1 55 41.4	10.191
18	10 58 20.17	1.8498	1 45 29.7	10.199
19	11 0 11.15	1.8497	1 35 17.5	10.207
20	11 2 2.13	1.8497	1 25 4.8	10.214
21	11 3 53.11	1.8497	1 14 51.7	10.221
22	11 5 44.10	1.8498	1 4 38.3	10.227
23	11 7 35.09	1.8499	0 54 24.5	10.232
24	11 9 26.09	1.8501	N. 0 44 10.4	10.237

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 9.					MONDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	11 9 26.09	1.8501	N. 0 44 10.4	10.237	0	12 39 28.96	1.9229	S. 7 22 10.5	9.802
1	11 11 17.10	1.8503	0 33 56.0	10.242	1	12 41 24.42	1.9257	7 31 57.9	9.778
2	11 13 8.13	1.8506	0 23 41.4	10.246	2	12 43 20.05	1.9286	7 41 43.8	9.753
3	11 14 59.18	1.8510	0 13 26.5	10.249	3	12 45 15.86	1.9316	7 51 28.3	9.728
4	11 16 50.25	1.8514	N. 0 3 11.5	10.251	4	12 47 11.84	1.9346	8 1 11.2	9.702
5	11 18 41.35	1.8519	S. 0 7 3.6	10.253	5	12 49 8.01	1.9377	8 10 52.5	9.675
6	11 20 32.48	1.8524	0 17 18.9	10.255	6	12 51 4.36	1.9408	8 20 32.2	9.648
7	11 22 23.64	1.8529	0 27 34.3	10.257	7	12 53 0.90	1.9440	8 30 10.3	9.620
8	11 24 14.83	1.8535	0 37 49.7	10.257	8	12 54 57.64	1.9473	8 39 46.6	9.591
9	11 26 6.06	1.8542	0 48 5.1	10.257	9	12 56 54.58	1.9506	8 49 21.2	9.562
10	11 27 57.34	1.8549	0 58 20.5	10.256	10	12 58 51.71	1.9539	8 58 54.0	9.532
11	11 29 48.66	1.8557	1 8 35.8	10.255	11	13 0 49.04	1.9573	9 8 25.0	9.501
12	11 31 40.02	1.8565	1 18 51.1	10.253	12	13 2 46.58	1.9607	9 17 54.1	9.469
13	11 33 31.44	1.8574	1 29 6.2	10.251	13	13 4 44.33	1.9642	9 27 21.3	9.437
14	11 35 22.91	1.8583	1 39 21.2	10.248	14	13 6 42.29	1.9677	9 36 46.5	9.404
15	11 37 14.44	1.8593	1 49 36.0	10.245	15	13 8 40.46	1.9713	9 46 9.7	9.370
16	11 39 6.03	1.8604	1 59 50.6	10.241	16	13 10 38.85	1.9750	9 55 30.9	9.336
17	11 40 57.69	1.8615	2 10 4.9	10.236	17	13 12 37.46	1.9787	10 4 50.0	9.301
18	11 42 49.41	1.8627	2 20 18.9	10.231	18	13 14 36.29	1.9824	10 14 7.0	9.264
19	11 44 41.21	1.8639	2 30 32.6	10.225	19	13 16 35.35	1.9862	10 23 21.8	9.227
20	11 46 33.08	1.8651	2 40 45.9	10.219	20	13 18 34.64	1.9901	10 32 34.3	9.190
21	11 48 25.02	1.8664	2 50 58.9	10.212	21	13 20 34.16	1.9940	10 41 44.6	9.152
22	11 50 17.05	1.8678	3 1 11.4	10.205	22	13 22 33.92	1.9980	10 50 52.5	9.113
23	11 52 9.16	1.8692	S. 3 11 23.4	10.197	23	13 24 33.92	2.0020	S. 10 59 58.1	9.073
	SUNDAY 10.					TUESDAY 12.			
0	11 54 1.36	1.8707	S. 3 21 35.0	10.188	0	13 26 34.16	2.0060	S. 11 9 1.3	9.033
1	11 55 53.65	1.8723	3 31 46.0	10.179	1	13 28 34.64	2.0101	11 18 2.1	8.992
2	11 57 46.04	1.8739	3 41 56.5	10.169	2	13 30 35.37	2.0142	11 27 0.3	8.949
3	11 59 38.52	1.8755	3 52 6.4	10.159	3	13 32 36.35	2.0184	11 35 56.0	8.906
4	12 1 31.10	1.8772	4 2 15.6	10.148	4	13 34 37.58	2.0226	11 44 49.0	8.862
5	12 3 23.79	1.8790	4 12 24.2	10.137	5	13 36 39.07	2.0269	11 53 39.4	8.817
6	12 5 16.58	1.8808	4 22 32.0	10.125	6	13 38 40.81	2.0313	12 2 27.1	8.772
7	12 7 9.48	1.8827	4 32 39.1	10.112	7	13 40 42.82	2.0357	12 11 12.0	8.726
8	12 9 2.50	1.8846	4 42 45.4	10.098	8	13 42 45.09	2.0401	12 19 54.2	8.679
9	12 10 55.63	1.8866	4 52 50.9	10.084	9	13 44 47.63	2.0445	12 28 33.5	8.631
10	12 12 48.89	1.8886	5 2 55.5	10.070	10	13 46 50.43	2.0490	12 37 9.9	8.583
11	12 14 42.27	1.8907	5 12 59.3	10.055	11	13 48 53.51	2.0536	12 45 43.4	8.533
12	12 16 35.78	1.8929	5 23 2.1	10.039	12	13 50 56.86	2.0582	12 54 13.9	8.482
13	12 18 29.42	1.8951	5 33 4.0	10.023	13	13 53 0.49	2.0628	13 2 41.3	8.431
14	12 20 23.19	1.8973	5 43 4.9	10.006	14	13 55 4.40	2.0675	13 11 5.6	8.379
15	12 22 17.10	1.8996	5 53 4.7	9.988	15	13 57 8.59	2.0722	13 19 26.8	8.326
16	12 24 11.14	1.9019	6 3 3.5	9.970	16	13 59 13.07	2.0769	13 27 44.7	8.272
17	12 26 5.33	1.9043	6 13 1.2	9.952	17	14 1 17.83	2.0817	13 35 59.4	8.218
18	12 27 59.66	1.9068	6 22 57.7	9.932	18	14 3 22.88	2.0865	13 44 10.8	8.162
19	12 29 54.15	1.9094	6 32 53.0	9.912	19	14 5 28.22	2.0914	13 52 18.8	8.105
20	12 31 48.79	1.9120	6 42 47.1	9.891	20	14 7 33.85	2.0963	14 0 23.4	8.047
21	12 33 43.59	1.9147	6 52 40.0	9.870	21	14 9 39.78	2.1013	14 8 24.5	7.988
22	12 35 38.55	1.9174	7 2 31.5	9.848	22	14 11 46.01	2.1063	14 16 22.0	7.929
23	12 37 33.67	1.9201	7 12 21.7	9.825	23	14 13 52.53	2.1113	14 24 16.0	7.869
24	12 39 28.96	1.9229	S. 7 22 10.5	9.802	24	14 15 59.36	2.1163	S. 14 32 6.3	7.808

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 13.					FRIDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 15 59.36	2.1163	S. 14 32 6.3	7.808	0	16 3 44.59	2.3745	S. 19 17 47.4	3.707
1	14 18 6.49	2.1214	14 39 52.9	7.746	1	16 6 7.21	2.3796	19 21 26.6	3.597
2	14 20 13.93	2.1265	14 47 35.8	7.683	2	16 8 30.14	2.3847	19 24 59.1	3.486
3	14 22 21.67	2.1316	14 55 14.9	7.619	3	16 10 53.37	2.3897	19 28 24.9	3.374
4	14 24 29.72	2.1368	15 2 50.1	7.554	4	16 13 16.91	2.3947	19 31 44.0	3.261
5	14 26 38.08	2.1420	15 10 21.4	7.488	5	16 15 40.74	2.3997	19 34 56.3	3.148
6	14 28 46.76	2.1472	15 17 48.7	7.421	6	16 18 4.87	2.4046	19 38 1.8	3.033
7	14 30 55.75	2.1524	15 25 11.9	7.353	7	16 20 29.29	2.4095	19 41 0.3	2.917
8	14 33 5.05	2.1577	15 32 31.1	7.284	8	16 22 54.01	2.4143	19 43 51.9	2.800
9	14 35 14.67	2.1630	15 39 46.1	7.215	9	16 25 19.01	2.4191	19 46 36.4	2.683
10	14 37 24.61	2.1683	15 46 56.9	7.144	10	16 27 44.30	2.4238	19 49 13.9	2.565
11	14 39 34.87	2.1737	15 54 3.4	7.072	11	16 30 9.87	2.4284	19 51 44.2	2.446
12	14 41 45.45	2.1790	16 1 5.6	6.999	12	16 32 35.71	2.4331	19 54 7.4	2.326
13	14 43 56.35	2.1844	16 8 3.4	6.926	13	16 35 1.83	2.4377	19 56 23.3	2.205
14	14 46 7.58	2.1898	16 14 56.7	6.851	14	16 37 28.23	2.4422	19 58 32.0	2.083
15	14 48 19.13	2.1952	16 21 45.5	6.776	15	16 39 54.89	2.4466	20 0 33.3	1.961
16	14 50 31.00	2.2006	16 28 29.8	6.699	16	16 42 21.82	2.4509	20 2 27.3	1.837
17	14 52 43.20	2.2061	16 35 9.4	6.622	17	16 44 49.01	2.4552	20 4 13.8	1.713
18	14 54 55.73	2.2116	16 41 44.4	6.543	18	16 47 16.45	2.4594	20 5 52.9	1.588
19	14 57 8.59	2.2171	16 48 14.6	6.463	19	16 49 44.14	2.4636	20 7 24.4	1.462
20	14 59 21.78	2.2226	16 54 40.0	6.382	20	16 52 12.08	2.4677	20 8 48.4	1.336
21	15 1 35.30	2.2280	17 1 0.5	6.301	21	16 54 40.26	2.4717	20 10 4.8	1.209
22	15 3 49.14	2.2335	17 7 16.1	6.218	22	16 57 8.69	2.4757	20 11 13.5	1.081
23	15 6 3.32	2.2391	S. 17 13 26.6	6.133	23	16 59 37.35	2.4797	S. 20 12 14.6	0.953
	THURSDAY 14.					SATURDAY 16.			
0	15 8 17.83	2.2446	S. 17 19 32.1	6.048	0	17 2 6.25	2.4835	S. 20 13 7.9	0.824
1	15 10 32.67	2.2501	17 25 32.5	5.963	1	17 4 35.37	2.4872	20 13 53.5	0.694
2	15 12 47.84	2.2557	17 31 27.7	5.876	2	17 7 4.71	2.4908	20 14 31.2	0.563
3	15 15 3.34	2.2612	17 37 17.6	5.788	3	17 9 34.27	2.4944	20 15 1.1	0.432
4	15 17 19.18	2.2667	17 43 2.3	5.699	4	17 12 4.04	2.4979	20 15 23.1	0.301
5	15 19 35.35	2.2722	17 48 41.6	5.610	5	17 14 34.02	2.5013	20 15 37.2	0.169
6	15 21 51.84	2.2777	17 54 15.5	5.519	6	17 17 4.20	2.5046	20 15 43.4	0.036
7	15 24 8.66	2.2832	17 59 43.9	5.427	7	17 19 34.58	2.5079	20 15 41.6	0.097
8	15 26 25.82	2.2887	18 5 6.8	5.334	8	17 22 5.15	2.5111	20 15 31.8	0.231
9	15 28 43.31	2.2942	18 10 24.0	5.240	9	17 24 35.91	2.5142	20 15 13.9	0.365
10	15 31 1.13	2.2997	18 15 35.6	5.144	10	17 27 6.85	2.5172	20 14 48.0	0.500
11	15 33 19.28	2.3052	18 20 41.4	5.048	11	17 29 37.97	2.5201	20 14 14.0	0.635
12	15 35 37.75	2.3107	18 25 41.4	4.951	12	17 32 9.26	2.5229	20 13 31.8	0.770
13	15 37 56.55	2.3161	18 30 35.6	4.853	13	17 34 40.72	2.5256	20 12 41.5	0.906
14	15 40 15.68	2.3215	18 35 23.8	4.754	14	17 37 12.33	2.5282	20 11 43.1	1.042
15	15 42 35.13	2.3268	18 40 6.1	4.654	15	17 39 44.10	2.5307	20 10 36.5	1.179
16	15 44 54.90	2.3323	18 44 42.3	4.553	16	17 42 16.01	2.5331	20 9 21.6	1.316
17	15 47 15.00	2.3377	18 49 12.4	4.451	17	17 44 48.07	2.5355	20 7 58.5	1.453
18	15 49 35.42	2.3430	18 53 36.4	4.347	18	17 47 20.27	2.5378	20 6 27.2	1.591
19	15 51 56.16	2.3482	18 57 54.1	4.243	19	17 49 52.60	2.5399	20 4 47.6	1.729
20	15 54 17.21	2.3535	19 2 5.6	4.138	20	17 52 25.06	2.5419	20 2 59.7	1.867
21	15 56 38.58	2.3588	19 6 10.7	4.032	21	17 54 57.64	2.5439	20 1 3.5	2.005
22	15 59 0.27	2.3641	19 10 9.4	3.925	22	17 57 30.33	2.5458	19 58 59.1	2.143
23	16 1 22.27	2.3693	19 14 1.7	3.817	23	18 0 3.13	2.5476	19 56 46.4	2.281
24	16 3 44.59	2.3745	S. 19 17 47.4	3.707	24	18 2 36.04	2.5492	S. 19 54 25.4	2.419

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 2 36.04	2.5492	S. 19 54 25.4	2.419
1	18 5 9.04	2.5508	19 51 56.1	2.558
2	18 7 42.14	2.5523	19 49 18.4	2.697
3	18 10 15.32	2.5537	19 46 32.4	2.836
4	18 12 48.58	2.5550	19 43 38.1	2.974
5	18 15 21.92	2.5562	19 40 35.5	3.113
6	18 17 55.32	2.5573	19 37 24.5	3.252
7	18 20 28.78	2.5582	19 34 5.2	3.390
8	18 23 2.30	2.5590	19 30 37.7	3.529
9	18 25 35.87	2.5598	19 27 1.8	3.667
10	18 28 9.48	2.5606	19 23 17.7	3.805
11	18 30 43.13	2.5612	19 19 25.3	3.942
12	18 33 16.82	2.5617	19 15 24.6	4.080
13	18 35 50.53	2.5620	19 11 15.7	4.217
14	18 38 24.26	2.5623	19 6 58.5	4.354
15	18 40 58.01	2.5625	19 2 33.1	4.491
16	18 43 31.76	2.5626	18 57 59.6	4.627
17	18 46 5.52	2.5627	18 53 17.9	4.762
18	18 48 39.28	2.5626	18 48 28.1	4.898
19	18 51 13.03	2.5623	18 43 30.1	5.033
20	18 53 46.76	2.5620	18 38 24.1	5.168
21	18 56 20.48	2.5617	18 33 10.0	5.302
22	18 58 54.17	2.5612	18 27 47.8	5.435
23	19 1 27.83	2.5607	S. 18 22 17.7	5.568

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 4 1.45	2.5600	S. 18 16 39.6	5.700
1	19 6 35.03	2.5593	18 10 53.6	5.832
2	19 9 8.57	2.5585	18 4 59.7	5.963
3	19 11 42.06	2.5577	17 58 58.0	6.094
4	19 14 15.49	2.5567	17 52 48.4	6.224
5	19 16 48.86	2.5556	17 46 31.1	6.353
6	19 19 22.16	2.5544	17 40 6.0	6.481
7	19 21 55.39	2.5532	17 33 33.3	6.608
8	19 24 28.55	2.5519	17 26 53.0	6.735
9	19 27 1.62	2.5506	17 20 5.1	6.862
10	19 29 34.61	2.5491	17 13 9.6	6.987
11	19 32 7.51	2.5476	17 6 6.7	7.110
12	19 34 40.32	2.5459	16 58 56.4	7.233
13	19 37 13.03	2.5442	16 51 38.7	7.356
14	19 39 45.63	2.5425	16 44 13.7	7.477
15	19 42 18.13	2.5407	16 36 41.5	7.597
16	19 44 50.51	2.5388	16 29 2.1	7.716
17	19 47 22.78	2.5368	16 21 15.5	7.835
18	19 49 54.93	2.5348	16 13 21.9	7.952
19	19 52 26.95	2.5327	16 5 21.3	8.068
20	19 54 58.85	2.5306	15 57 13.7	8.183
21	19 57 30.62	2.5283	15 48 59.2	8.297
22	20 0 2.25	2.5261	15 40 38.0	8.410
23	20 2 33.75	2.5238	15 32 10.1	8.521
24	20 5 5.11	2.5214	S. 15 23 35.5	8.632

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	20 5 5.11	2.5214	S. 15 23 35.5	8.632
1	20 7 36.32	2.5190	15 14 54.3	8.741
2	20 10 7.39	2.5165	15 6 6.6	8.849
3	20 12 38.30	2.5139	14 57 12.5	8.955
4	20 15 9.06	2.5113	14 48 12.0	9.061
5	20 17 39.66	2.5087	14 39 5.2	9.165
6	20 20 10.11	2.5061	14 29 52.2	9.268
7	20 22 40.40	2.5034	14 20 33.1	9.369
8	20 25 10.52	2.5007	14 11 7.9	9.469
9	20 27 40.48	2.4979	14 1 36.7	9.568
10	20 30 10.27	2.4951	13 51 59.7	9.666
11	20 32 39.89	2.4922	13 42 16.8	9.762
12	20 35 9.33	2.4893	13 32 28.2	9.857
13	20 37 38.60	2.4864	13 22 34.0	9.950
14	20 40 7.70	2.4834	13 12 34.2	10.042
15	20 42 36.61	2.4804	13 2 28.9	10.132
16	20 45 5.35	2.4774	12 52 18.3	10.221
17	20 47 33.91	2.4744	12 42 2.4	10.309
18	20 50 2.28	2.4714	12 31 41.2	10.395
19	20 52 30.47	2.4683	12 21 14.9	10.480
20	20 54 58.47	2.4652	12 10 43.6	10.563
21	20 57 26.29	2.4621	12 0 7.4	10.644
22	20 59 53.92	2.4590	11 49 26.3	10.724
23	21 2 21.36	2.4558	S. 11 38 40.4	10.802

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 4 48.62	2.4527	S. 11 27 49.9	10.880
1	21 7 15.69	2.4495	11 16 54.8	10.956
2	21 9 42.56	2.4464	11 5 55.2	11.030
3	21 12 9.24	2.4432	10 54 51.2	11.103
4	21 14 35.74	2.4400	10 43 42.9	11.173
5	21 17 2.04	2.4368	10 32 30.5	11.242
6	21 19 28.15	2.4336	10 21 13.9	11.310
7	21 21 54.07	2.4304	10 9 53.3	11.376
8	21 24 19.80	2.4272	9 58 28.8	11.440
9	21 26 45.34	2.4240	9 47 0.5	11.503
10	21 29 10.68	2.4208	9 35 28.4	11.564
11	21 31 35.84	2.4177	9 23 52.7	11.624
12	21 34 0.80	2.4145	9 12 13.5	11.682
13	21 36 25.57	2.4113	9 0 30.8	11.739
14	21 38 50.16	2.4081	8 48 44.8	11.794
15	21 41 14.56	2.4050	8 36 55.6	11.847
16	21 43 38.76	2.4018	8 25 3.2	11.899
17	21 46 2.77	2.3987	8 13 7.7	11.949
18	21 48 26.60	2.3956	8 1 9.3	11.997
19	21 50 50.24	2.3925	7 49 8.0	12.044
20	21 53 13.70	2.3894	7 37 4.0	12.089
21	21 55 36.97	2.3863	7 24 57.3	12.133
22	21 58 0.06	2.3832	7 12 48.0	12.176
23	22 0 22.97	2.3802	7 0 36.2	12.217
24	22 2 45.69	2.3772	S. 6 48 22.0	12.256

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	22 2 45.69	2.3772	S. 6 48 22.0	12.256
1	22 5 8.23	2.3742	6 36 5.5	12.293
2	22 7 30.60	2.3712	6 23 46.9	12.328
3	22 9 52.78	2.3683	6 11 26.2	12.362
4	22 12 14.79	2.3654	5 59 3.5	12.395
5	22 14 36.63	2.3625	5 46 38.9	12.426
6	22 16 58.29	2.3596	5 34 12.4	12.455
7	22 19 19.78	2.3568	5 21 44.3	12.482
8	22 21 41.10	2.3540	5 9 14.5	12.508
9	22 24 2.25	2.3512	4 56 43.2	12.533
10	22 26 23.24	2.3484	4 44 10.5	12.556
11	22 28 44.07	2.3457	4 31 36.4	12.578
12	22 31 4.73	2.3429	4 19 1.1	12.598
13	22 33 25.22	2.3402	4 6 24.6	12.617
14	22 35 45.56	2.3376	3 53 47.1	12.633
15	22 38 5.74	2.3351	3 41 8.6	12.648
16	22 40 25.77	2.3325	3 28 29.3	12.662
17	22 42 45.64	2.3300	3 15 49.2	12.674
18	22 45 5.37	2.3275	3 3 8.4	12.685
19	22 47 24.95	2.3251	2 50 27.0	12.696
20	22 49 44.38	2.3226	2 37 45.0	12.703
21	22 52 3.67	2.3202	2 25 2.6	12.709
22	22 54 22.81	2.3178	2 12 19.9	12.714
23	22 56 41.81	2.3155	S. 1 59 37.0	12.717

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 59 0.67	2.3132	S. 1 46 53.9	12.719
1	23 1 19.40	2.3110	1 34 10.7	12.719
2	23 3 37.99	2.3088	1 21 27.6	12.718
3	23 5 56.45	2.3067	1 8 44.6	12.715
4	23 8 14.79	2.3045	0 56 1.8	12.711
5	23 10 33.00	2.3024	0 43 19.3	12.706
6	23 12 51.08	2.3004	0 30 37.1	12.699
7	23 15 9.04	2.2984	0 17 55.4	12.691
8	23 17 26.89	2.2964	S. 0 5 14.2	12.681
9	23 19 44.62	2.2945	N. 0 7 26.4	12.670
10	23 22 2.23	2.2926	0 20 6.2	12.657
11	23 24 19.73	2.2907	0 32 45.2	12.643
12	23 26 37.12	2.2889	0 45 23.4	12.628
13	23 28 54.40	2.2872	0 58 0.6	12.612
14	23 31 11.58	2.2855	1 10 36.8	12.594
15	23 33 28.66	2.2838	1 23 11.8	12.574
16	23 35 45.64	2.2821	1 35 45.7	12.554
17	23 38 2.52	2.2806	1 48 18.3	12.532
18	23 40 19.30	2.2790	2 0 49.5	12.509
19	23 42 35.99	2.2775	2 13 19.4	12.485
20	23 44 52.60	2.2760	2 25 47.7	12.459
21	23 47 9.12	2.2746	2 38 14.4	12.432
22	23 49 25.55	2.2732	2 50 39.5	12.404
23	23 51 41.90	2.2718	3 3 2.9	12.374
24	23 53 58.17	2.2705	N. 3 15 24.4	12.343

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 53 58.17	2.2705	N. 3 15 24.4	12.343
1	23 56 14.36	2.2692	3 27 44.0	12.311
2	23 58 30.48	2.2680	3 40 1.7	12.278
3	0 0 46.52	2.2668	3 52 17.3	12.243
4	0 3 2.50	2.2657	4 4 30.8	12.207
5	0 5 18.41	2.2646	4 16 42.1	12.170
6	0 7 34.25	2.2635	4 28 51.2	12.132
7	0 9 50.03	2.2625	4 40 58.0	12.093
8	0 12 5.75	2.2615	4 53 2.4	12.053
9	0 14 21.41	2.2605	5 5 4.3	12.011
10	0 16 37.01	2.2596	5 17 3.7	11.968
11	0 18 52.56	2.2587	5 29 0.5	11.925
12	0 21 8.06	2.2579	5 40 54.7	11.880
13	0 23 23.51	2.2571	5 52 46.1	11.833
14	0 25 38.91	2.2564	6 4 34.7	11.786
15	0 27 54.27	2.2557	6 16 20.5	11.738
16	0 30 9.59	2.2550	6 28 3.3	11.689
17	0 32 24.87	2.2543	6 39 43.1	11.638
18	0 34 40.11	2.2537	6 51 19.9	11.587
19	0 36 55.31	2.2531	7 2 53.6	11.535
20	0 39 10.48	2.2525	7 14 24.1	11.481
21	0 41 25.61	2.2520	7 25 51.3	11.426
22	0 43 40.72	2.2516	7 37 15.2	11.370
23	0 45 55.80	2.2512	N. 7 48 35.8	11.314

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 48 10.86	2.2507	N. 7 59 52.9	11.256
1	0 50 25.89	2.2503	8 11 6.5	11.197
2	0 52 40.90	2.2500	8 22 16.6	11.138
3	0 54 55.89	2.2497	8 33 23.1	11.077
4	0 57 10.87	2.2494	8 44 25.9	11.016
5	0 59 25.83	2.2492	8 55 25.0	10.953
6	1 1 40.77	2.2489	9 6 20.3	10.889
7	1 3 55.70	2.2487	9 17 11.7	10.825
8	1 6 10.62	2.2485	9 27 59.3	10.760
9	1 8 25.53	2.2484	9 38 43.0	10.694
10	1 10 40.43	2.2483	9 49 22.6	10.626
11	1 12 55.33	2.2482	9 59 58.2	10.558
12	1 15 10.22	2.2482	10 10 29.6	10.489
13	1 17 25.11	2.2482	10 20 56.9	10.420
14	1 19 40.00	2.2482	10 31 20.0	10.349
15	1 21 54.89	2.2482	10 41 38.9	10.278
16	1 24 9.78	2.2482	10 51 53.4	10.206
17	1 26 24.68	2.2483	11 2 3.6	10.133
18	1 28 39.58	2.2484	11 12 9.3	10.059
19	1 30 54.49	2.2485	11 22 10.6	9.984
20	1 33 9.40	2.2486	11 32 7.4	9.909
21	1 35 24.32	2.2487	11 41 59.7	9.833
22	1 37 39.25	2.2489	11 51 47.3	9.756
23	1 39 54.19	2.2491	12 1 30.2	9.677
24	1 42 9.14	2.2493	N. 12 11 8.5	9.598

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 25.					WEDNESDAY 27.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 42 9.14	2.2493	N.12 11 8.5	9.598	0	3 30 28.71	2.2629	N.18 9 3.9	5.115
1	1 44 24.10	2.2495	12 20 42.0	9.519	1	3 32 44.48	2.2629	18 14 7.7	5.011
2	1 46 39.08	2.2497	12 30 10.8	9.439	2	3 35 0.26	2.2629	18 19 5.2	4.907
3	1 48 54.07	2.2500	12 39 34.7	9.358	3	3 37 16.04	2.2629	18 23 56.5	4.802
4	1 51 9.08	2.2502	12 48 53.7	9.276	4	3 39 31.81	2.2628	18 28 41.5	4.697
5	1 53 24.10	2.2505	12 58 7.8	9.194	5	3 41 47.58	2.2627	18 33 20.1	4.592
6	1 55 39.14	2.2508	13 7 17.0	9.111	6	3 44 3.34	2.2626	18 37 52.5	4.487
7	1 57 54.20	2.2512	13 16 21.2	9.027	7	3 46 19.09	2.2625	18 42 18.6	4.382
8	2 0 9.28	2.2515	13 25 20.3	8.943	8	3 48 34.84	2.2624	18 46 38.3	4.276
9	2 2 24.38	2.2518	13 34 14.3	8.858	9	3 50 50.58	2.2622	18 50 51.7	4.170
10	2 4 39.49	2.2521	13 43 3.2	8.772	10	3 53 6.31	2.2620	18 54 58.7	4.064
11	2 6 54.62	2.2524	13 51 47.0	8.686	11	3 55 22.02	2.2617	18 58 59.3	3.957
12	2 9 9.78	2.2527	14 0 25.5	8.599	12	3 57 37.72	2.2615	19 2 53.6	3.851
13	2 11 24.95	2.2531	14 8 58.8	8.511	13	3 59 53.40	2.2612	19 6 41.4	3.744
14	2 13 40.15	2.2534	14 17 26.8	8.422	14	4 2 9.06	2.2608	19 10 22.9	3.638
15	2 15 55.37	2.2538	14 25 49.5	8.333	15	4 4 24.70	2.2604	19 13 58.0	3.531
16	2 18 10.61	2.2542	14 34 6.8	8.243	16	4 6 40.31	2.2600	19 17 26.6	3.424
17	2 20 25.87	2.2546	14 42 18.7	8.153	17	4 8 55.90	2.2596	19 20 48.8	3.317
18	2 22 41.16	2.2550	14 50 25.2	8.063	18	4 11 11.46	2.2592	19 24 4.6	3.210
19	2 24 56.47	2.2553	14 58 26.2	7.972	19	4 13 27.00	2.2587	19 27 13.9	3.102
20	2 27 11.80	2.2557	15 6 21.8	7.880	20	4 15 42.50	2.2581	19 30 16.8	2.995
21	2 29 27.15	2.2560	15 14 11.8	7.787	21	4 17 57.97	2.2575	19 33 13.3	2.887
22	2 31 42.52	2.2563	15 21 56.2	7.694	22	4 20 13.40	2.2569	19 36 3.3	2.780
23	2 33 57.91	2.2567	N.15 29 35.1	7.601	23	4 22 28.80	2.2563	N.19 38 46.9	2.672
TUESDAY 26.					THURSDAY 28.				
0	2 36 13.33	2.2571	N.15 37 8.3	7.507	0	4 24 44.16	2.2557	N.19 41 24.0	2.565
1	2 38 28.77	2.2575	15 44 35.8	7.412	1	4 26 59.48	2.2550	19 43 54.7	2.457
2	2 40 44.23	2.2579	15 51 57.7	7.317	2	4 29 14.76	2.2542	19 46 18.9	2.350
3	2 42 59.71	2.2582	15 59 13.9	7.222	3	4 31 29.99	2.2534	19 48 36.7	2.242
4	2 45 15.22	2.2586	16 6 24.3	7.125	4	4 33 45.17	2.2526	19 50 48.0	2.135
5	2 47 30.75	2.2589	16 13 28.9	7.028	5	4 36 0.30	2.2517	19 52 52.8	2.027
6	2 49 46.29	2.2593	16 20 27.7	6.931	6	4 38 15.38	2.2508	19 54 51.2	1.920
7	2 52 1.86	2.2596	16 27 20.7	6.834	7	4 40 30.40	2.2499	19 56 43.2	1.812
8	2 54 17.44	2.2599	16 34 7.8	6.736	8	4 42 45.37	2.2489	19 58 28.7	1.705
9	2 56 33.04	2.2602	16 40 49.0	6.637	9	4 45 0.28	2.2479	20 0 7.8	1.597
10	2 58 48.66	2.2605	16 47 24.3	6.539	10	4 47 15.12	2.2469	20 1 40.4	1.490
11	3 1 4.30	2.2607	16 53 53.7	6.440	11	4 49 29.90	2.2458	20 3 6.6	1.383
12	3 3 19.95	2.2610	17 0 17.1	6.340	12	4 51 44.62	2.2447	20 4 26.4	1.276
13	3 5 35.62	2.2612	17 6 34.5	6.239	13	4 53 59.27	2.2436	20 5 39.8	1.169
14	3 7 51.30	2.2615	17 12 45.8	6.139	14	4 56 13.85	2.2424	20 6 46.7	1.062
15	3 10 6.99	2.2617	17 18 51.1	6.038	15	4 58 28.36	2.2412	20 7 47.2	0.956
16	3 12 22.70	2.2620	17 24 50.4	5.937	16	5 0 42.79	2.2399	20 8 41.4	0.849
17	3 14 38.43	2.2622	17 30 43.6	5.836	17	5 2 57.14	2.2386	20 9 29.1	0.742
18	3 16 54.16	2.2623	17 36 30.7	5.734	18	5 5 11.42	2.2372	20 10 10.5	0.636
19	3 19 9.90	2.2624	17 42 11.7	5.632	19	5 7 25.61	2.2358	20 10 45.5	0.530
20	3 21 25.65	2.2626	17 47 46.5	5.529	20	5 9 39.72	2.2344	20 11 14.1	0.424
21	3 23 41.41	2.2627	17 53 15.1	5.426	21	5 11 53.74	2.2329	20 11 36.4	0.318
22	3 25 57.17	2.2628	17 58 37.6	5.323	22	5 14 7.67	2.2314	20 11 52.3	0.213
23	3 28 12.94	2.2628	18 3 53.9	5.219	23	5 16 21.51	2.2299	20 12 1.9	0.107
24	3 30 28.71	2.2629	N.18 9 3.9	5.115	24	5 18 35.26	2.2283	N.20 12 5.2	0.002

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 18 35.26	2.2283	N.20 12 5.2	0.002
1	5 20 48.91	2.2267	20 12 2.2	0.103
2	5 23 2.46	2.2251	20 11 52.9	0.207
3	5 25 15.92	2.2234	20 11 37.3	0.312
4	5 27 29.27	2.2217	20 11 15.5	0.416
5	5 29 42.52	2.2199	20 10 47.4	0.520
6	5 31 55.66	2.2181	20 10 13.1	0.624
7	5 34 8.69	2.2162	20 9 32.6	0.727
8	5 36 21.61	2.2144	20 8 45.9	0.830
9	5 38 34.42	2.2125	20 7 53.0	0.933
10	5 40 47.11	2.2106	20 6 54.0	1.035
11	5 42 59.68	2.2086	20 5 48.9	1.137
12	5 45 12.13	2.2065	20 4 37.6	1.239
13	5 47 24.46	2.2045	20 3 20.2	1.340
14	5 49 36.67	2.2024	20 1 56.8	1.441
15	5 51 48.75	2.2002	20 0 27.3	1.542
16	5 54 0.70	2.1981	19 58 51.8	1.642
17	5 56 12.52	2.1959	19 57 10.3	1.742
18	5 58 24.21	2.1937	19 55 22.8	1.842
19	6 0 35.76	2.1914	19 53 29.3	1.941
20	6 2 47.18	2.1892	19 51 29.9	2.040
21	6 4 58.46	2.1869	19 49 24.5	2.138
22	6 7 9.61	2.1846	19 47 13.3	2.236
23	6 9 20.61	2.1822	N.19 44 56.2	2.333

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 11 31.47	2.1798	N.19 42 33.3	2.430
1	6 13 42.18	2.1773	19 40 4.5	2.527
2	6 15 52.75	2.1748	19 37 30.0	2.623
3	6 18 3.16	2.1723	19 34 49.7	2.719
4	6 20 13.43	2.1698	19 32 3.7	2.815
5	6 22 23.55	2.1673	19 29 11.9	2.910
6	6 24 33.51	2.1648	19 26 14.5	3.004
7	6 26 43.32	2.1622	19 23 11.5	3.097
8	6 28 52.97	2.1596	19 20 2.8	3.191
9	6 31 2.46	2.1569	19 16 48.5	3.284
10	6 33 11.80	2.1542	19 13 28.7	3.377
11	6 35 20.97	2.1515	19 10 3.3	3.469
12	6 37 29.98	2.1488	19 6 32.4	3.560
13	6 39 38.83	2.1461	19 2 56.1	3.651
14	6 41 47.51	2.1433	18 59 14.3	3.741
15	6 43 56.02	2.1405	18 55 27.1	3.831
16	6 46 4.37	2.1378	18 51 34.6	3.920
17	6 48 12.55	2.1350	18 47 36.8	4.008
18	6 50 20.57	2.1321	18 43 33.6	4.097
19	6 52 28.41	2.1292	18 39 25.1	4.185
20	6 54 36.08	2.1264	18 35 11.4	4.272
21	6 56 43.58	2.1235	18 30 52.5	4.358
22	6 58 50.90	2.1206	18 26 28.4	4.444
23	7 0 58.05	2.1177	18 21 59.2	4.530
24	7 3 5.02	2.1147	N.18 17 24.8	4.615

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 3 5.02	2.1147	N.18 17 24.8	4.615
1	7 5 11.81	2.1117	18 12 45.4	4.699
2	7 7 18.43	2.1088	18 8 0.9	4.782
3	7 9 24.87	2.1059	18 3 11.5	4.865
4	7 11 31.14	2.1029	17 58 17.1	4.947
5	7 13 37.22	2.0999	17 53 17.8	5.029
6	7 15 43.13	2.0969	17 48 13.6	5.111
7	7 17 48.86	2.0939	17 43 4.5	5.192
8	7 19 54.40	2.0909	17 37 50.6	5.272
9	7 21 59.76	2.0878	17 32 31.9	5.351
10	7 24 4.94	2.0848	17 27 8.5	5.430
11	7 26 9.94	2.0818	17 21 40.3	5.508
12	7 28 14.76	2.0788	17 16 7.5	5.585
13	7 30 19.40	2.0757	17 10 30.1	5.662
14	7 32 23.85	2.0727	17 4 48.1	5.738
15	7 34 28.12	2.0696	16 59 1.5	5.814
16	7 36 32.20	2.0665	16 53 10.4	5.889
17	7 38 36.10	2.0634	16 47 14.8	5.963
18	7 40 39.81	2.0603	16 41 14.8	6.037
19	7 42 43.34	2.0573	16 35 10.3	6.111
20	7 44 46.69	2.0543	16 29 1.5	6.183
21	7 46 49.86	2.0512	16 22 48.3	6.255
22	7 48 52.84	2.0482	16 16 30.9	6.326
23	7 50 55.64	2.0451	N.16 10 9.2	6.396

MONDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 52 58.25	2.0420	N.16 3 43.4	6.466

PHASES OF THE MOON.

	d	h	m
● New Moon, . .	3	12	23.6
☽ First Quarter, . .	11	15	50.7
○ Full Moon, . . .	18	18	35.8
☾ Last Quarter, . .	25	8	46.1

	d	h
☾ Apogee, ...	7	20.1
☾ Perigee, ...	20	2.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Fomalhaut	W.	97° 18′ 48″	3201	98° 44′ 56″	3214	100° 10′ 49″	3227	101° 36′ 26″	3242
	a Pegasi	W.	80 18 40	2883	81 51 21	2891	83 23 52	2898	84 56 14	2905
	Mars	W.	45 36 6	2986	47 6 34	2996	48 36 52	3005	50 6 59	3013
	a Arietis	W.	36 41 9	2870	38 14 6	2869	39 47 5	2869	41 20 4	2870
	Sun	E.	29 17 9	3111	27 49 13	3127	26 21 36	3142	24 54 17	3156
5	Sun	W.	17 24 36	3464	18 45 40	3454	20 6 55	3448	21 28 17	3445
	Saturn	E.	71 39 29	3018	70 9 38	3025	68 39 56	3032	67 10 23	3039
	Spica	E.	81 26 50	2983	79 56 16	2990	78 25 51	2997	76 55 34	3002
	Jupiter	E.	107 30 45	2973	105 59 59	2980	104 29 21	2987	102 58 52	2993
6	Sun	W.	28 15 39	3443	29 37 7	3445	30 58 33	3446	32 19 57	3449
	Saturn	E.	59 44 39	3070	58 15 53	3077	56 47 15	3082	55 18 44	3088
	Spica	E.	69 25 58	3031	67 56 24	3036	66 26 56	3041	64 57 34	3046
	Jupiter	E.	95 28 21	3022	93 58 36	3027	92 28 57	3033	90 59 25	3037
	Antares	E	114 49 5	3063	113 20 10	3068	111 51 21	3072	110 22 37	3076
7	Sun	W.	39 6 20	3459	40 27 30	3461	41 48 38	3462	43 9 45	3463
	Saturn	E.	47 57 49	3114	46 29 57	3119	45 2 10	3124	43 34 29	3129
	Spica	E.	57 32 3	3065	56 3 10	3068	54 34 21	3070	53 5 35	3073
	Jupiter	E.	83 33 4	3057	82 4 2	3060	80 35 3	3063	79 6 8	3065
	Antares	E.	103 0 7	3098	101 31 49	3096	100 3 34	3098	98 35 22	3100
8	Sun	W.	49 55 1	3466	51 16 3	3465	52 37 6	3465	53 58 9	3464
	Saturn	E.	36 17 26	3151	34 50 18	3155	33 23 15	3159	31 56 17	3164
	Spica	E.	45 42 20	3079	44 13 45	3080	42 45 11	3079	41 16 36	3079
	Jupiter	E.	71 42 10	3073	70 13 27	3073	68 44 45	3073	67 16 3	3073
	Antares	E.	91 14 53	3106	89 46 51	3107	88 18 50	3106	86 50 48	3106
9	Sun	W.	60 43 52	3453	62 5 9	3449	63 26 30	3445	64 47 56	3441
	Regulus	W.	20 40 57	3232	22 6 40	3201	23 32 48	3183	24 59 18	3167
	Spica	E.	33 53 23	3070	32 24 37	3068	30 55 48	3065	29 26 55	3060
	Jupiter	E.	59 52 15	3065	58 23 23	3062	56 54 27	3059	55 25 27	3056
	Antares	E.	79 30 25	3099	78 2 14	3096	76 34 0	3093	75 5 42	3090
10	Sun	W.	71 36 27	3412	72 58 30	3405	74 20 41	3398	75 43 0	3389
	Regulus	W.	32 16 8	3102	33 44 15	3090	35 12 37	3079	36 41 12	3068
	Spica	E.	22 1 9	3035	20 31 40	3029	19 2 3	3022	17 32 17	3014
	Jupiter	E.	47 59 13	3030	46 29 38	3025	44 59 56	3018	43 30 6	3011
	Antares	E.	67 43 1	3067	66 14 11	3062	64 45 15	3056	63 16 11	3049
11	Sun	W.	82 37 7	3342	84 0 30	3331	85 24 6	3320	86 47 54	3308
	Regulus	W.	44 7 35	3010	45 37 35	2999	47 7 49	2986	48 38 19	2974
	Jupiter	E.	35 58 32	2969	34 27 40	2959	32 56 36	2949	31 25 19	2938
	Antares	E.	55 48 44	3012	54 18 46	3008	52 48 37	2996	51 18 18	2986
	a Aquilæ	E.	106 59 50	3416	105 37 52	3400	104 15 36	3384	102 53 1	3368
12	Sun	W.	93 50 32	3242	95 15 51	3228	96 41 27	3214	98 7 20	3196
	Regulus	W.	56 14 50	2907	57 47 0	2893	59 19 28	2879	60 52 14	2863
	Jupiter	E.	23 45 23	2880	22 12 38	2866	20 39 36	2854	19 6 18	2841
	Antares	E.	43 43 48	2939	42 12 18	2928	40 40 35	2920	39 8 41	2909
	a Aquilæ	E.	95 55 34	3290	94 31 11	3275	93 6 30	3259	91 41 31	3245
13	Sun	W.	105 21 25	3118	106 49 13	3101	108 17 22	3083	109 45 52	3066
	Regulus	W.	68 41 4	2785	70 15 52	2768	71 51 2	2751	73 26 34	2735

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Fomalhaut	W.	103° 1′ 46″	3256	104° 26′ 49″	3272	105° 51′ 33″	3288	107° 15′ 58″	3306
	α Pegasi	W.	86 28 26	2914	88 0 27	2922	89 32 18	2931	91 3 57	2940
	Mars	W.	51 36 56	3021	53 6 43	3030	54 36 19	3038	56 5 45	3046
	α Arietis	W.	42 53 1	2872	44 25 56	2874	45 58 48	2877	47 31 36	2881
	Sun	E.	23 27 18	3177	22 0 41	3197	20 34 28	3219	19 8 41	3245
5	Sun	W.	22 49 43	3443	24 11 11	3442	25 32 40	3441	26 54 10	3442
	Saturn	E.	65 40 58	3045	64 11 41	3052	62 42 32	3059	61 13 32	3065
	Spica	E.	75 25 24	3009	73 55 22	3014	72 25 27	3020	70 55 39	3026
	Jupiter	E.	101 28 31	3000	99 58 18	3005	98 28 12	3011	96 58 13	3017
6	Sun	W.	33 41 18	3451	35 2 37	3453	36 23 54	3455	37 45 8	3457
	Saturn	E.	53 50 20	3094	52 22 3	3099	50 53 52	3104	49 25 47	3110
	Spica	E.	63 28 18	3050	61 59 7	3054	60 30 1	3058	59 1 0	3061
	Jupiter	E.	89 29 58	3042	88 0 37	3046	86 31 21	3050	85 2 10	3054
	Antares	E	108 53 58	3080	107 25 24	3083	105 56 54	3087	104 28 29	3090
7	Sun	W.	44 30 50	3464	45 51 54	3465	47 12 57	3466	48 33 59	3466
	Saturn	E.	42 6 54	3133	40 39 24	3137	39 11 59	3142	37 44 40	3146
	Spica	E.	51 36 52	3074	50 8 11	3077	48 39 33	3078	47 10 56	3078
	Jupiter	E.	77 37 16	3068	76 8 27	3069	74 39 40	3070	73 10 54	3072
	Antares	E.	97 7 12	3102	95 39 5	3104	94 11 0	3105	92 42 56	3105
8	Sun	W.	55 19 13	3463	56 40 19	3461	58 1 27	3458	59 22 38	3455
	Saturn	E.	30 29 25	3170	29 2 40	3177	27 36 3	3184	26 9 35	3193
	Spica	E.	39 48 1	3078	38 19 24	3077	36 50 46	3075	35 22 6	3073
	Jupiter	E.	65 47 20	3072	64 18 36	3071	62 49 51	3069	61 21 4	3068
	Antares	E.	85 22 46	3105	83 54 43	3106	82 26 39	3103	80 58 33	3101
9	Sun	W.	66 9 26	3436	67 31 2	3431	68 52 44	3425	70 14 32	3419
	Regulus	W.	26 26 7	3152	27 53 14	3138	29 20 37	3126	30 48 15	3114
	Spica	E.	27 57 57	3056	26 28 54	3052	24 59 46	3047	23 30 31	3041
	Jupiter	E.	53 56 23	3052	52 27 14	3047	50 58 0	3043	49 28 40	3037
	Antares	E.	73 37 20	3086	72 8 53	3082	70 40 21	3078	69 11 44	3073
10	Sun	W.	77 5 29	3381	78 28 7	3372	79 50 56	3362	81 13 56	3352
	Regulus	W.	38 10 1	3066	39 39 4	3046	41 8 20	3034	42 37 50	3022
	Spica	E.	16 2 22	3007	14 32 18	2998	13 2 3	2989	11 31 37	2981
	Jupiter	E.	42 0 7	3004	40 29 59	2996	38 59 41	2987	37 29 12	2978
	Antares	E.	61 46 59	3043	60 17 39	3035	58 48 10	3028	57 18 32	3020
11	Sun	W.	88 11 56	3296	89 36 12	3283	91 0 43	3270	92 25 30	3257
	Regulus	W.	50 9 4	2962	51 40 5	2948	53 11 23	2936	54 42 58	2921
	Jupiter	E.	29 53 48	2927	28 22 4	2916	26 50 5	2905	25 17 52	2892
	Antares	E.	49 47 48	2977	48 17 6	2967	46 46 12	2958	45 15 6	2948
	α Aquilæ	E.	101 30 8	3352	100 6 57	3335	98 43 28	3320	97 19 40	3305
12	Sun	W.	99 33 31	3183	101 0 1	3168	102 26 49	3151	103 53 57	3134
	Regulus	W.	62 25 20	2848	63 58 46	2833	65 32 31	2817	67 6 37	2801
	Jupiter	E.	17 32 43	2827	15 58 50	2813	14 24 39	2800	12 50 11	2787
	Antares	E.	37 36 34	2900	36 4 15	2891	34 31 45	2883	32 59 5	2876
	α Aquilæ	E.	90 16 15	3231	88 50 42	3216	87 24 52	3202	85 58 45	3188
13	Sun	W.	111 14 44	3047	112 43 58	3030	114 13 34	3011	115 43 33	2993
	Regulus	W.	75 2 28	2717	76 38 45	2700	78 15 25	2682	79 52 29	2664

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
13	Saturn	W.	24° 46′ 42″	2880	26° 19′ 26″	2854	27° 52′ 44″	2829	29° 26′ 34″	2805
	Spica	W.	14 42 30	2763	16 17 47	2746	17 53 26	2730	19 29 26	2713
	Antares	E.	31 26 15	2869	29 53 17	2864	28 20 12	2860	26 47 2	2859
	a Aquilæ	E.	84 32 22	3174	83 5 42	3162	81 38 47	3148	80 11 36	3136
14	Sun	W.	117 13 55	2974	118 44 40	2955	120 15 49	2937	121 47 21	2918
	Regulus	W.	81 29 57	2646	83 7 49	2628	84 46 6	2610	86 24 47	2592
	Saturn	W.	37 23 26	2692	39 0 17	2671	40 37 36	2650	42 15 23	2629
	Spica	W.	27 35 7	2626	29 13 26	2608	30 52 10	2591	32 31 18	2572
	a Aquilæ	E.	72 52 5	3081	71 23 32	3072	69 54 48	3064	68 25 54	3056
	Fomalhaut	E.	101 46 3	3109	100 18 4	3087	98 49 38	3065	97 20 45	3043
15	Saturn	W.	50 31 22	2527	52 11 57	2507	53 53 0	2488	55 34 30	2469
	Spica	W.	40 53 16	2481	42 34 56	2462	44 17 2	2443	45 59 35	2426
	Jupiter	W.	14 58 37	2487	16 40 8	2467	18 22 7	2449	20 4 32	2430
	a Aquilæ	E.	60 59 40	3040	59 30 17	3042	58 0 56	3045	56 31 39	3052
	Fomalhaut	E.	89 49 51	2944	88 18 28	2926	86 46 42	2909	85 14 35	2893
16	Saturn	W.	64 8 45	2376	65 52 56	2357	67 37 32	2339	69 22 34	2322
	Spica	W.	54 38 44	2336	56 23 51	2319	58 9 23	2302	59 55 19	2285
	Jupiter	W.	28 43 13	2339	30 28 15	2322	32 13 42	2305	33 59 34	2288
	a Aquilæ	E.	49 8 21	3130	47 40 48	3156	46 13 49	3193	44 47 32	3235
	Fomalhaut	E.	77 29 16	2828	75 55 24	2818	74 21 19	2810	72 47 4	2803
	a Pegasi	E.	94 1 56	2493	92 20 33	2475	90 38 45	2458	88 56 33	2441
17	Saturn	W.	78 13 50	2242	80 1 15	2227	81 49 2	2213	83 37 10	2199
	Spica	W.	68 51 2	2206	70 39 20	2192	72 27 59	2178	74 16 59	2165
	Jupiter	W.	42 54 54	2210	44 43 7	2196	46 31 41	2182	48 20 36	2168
	Antares	W.	24 6 52	2364	25 51 18	2331	27 36 33	2301	29 22 31	2274
	Fomalhaut	E.	64 54 15	2794	63 19 39	2798	61 45 9	2805	60 10 47	2815
	a Pegasi	E.	80 19 58	2868	78 35 38	2857	76 51 1	2845	75 6 7	2834
18	Spica	W.	83 26 52	2105	85 17 43	2095	87 8 50	2085	89 0 12	2077
	Jupiter	W.	57 30 2	2109	59 20 48	2099	61 11 49	2089	63 3 5	2081
	Antares	W.	38 21 2	2174	40 10 8	2159	41 59 38	2145	43 49 29	2132
	Fomalhaut	E.	52 23 33	2916	50 51 34	2950	49 20 18	2989	47 49 52	3035
	a Pegasi	E.	66 18 12	2296	64 32 7	2292	62 45 56	2289	60 59 40	2287
19	Jupiter	W.	72 22 27	2046	74 14 49	2041	76 7 19	2037	77 59 55	2033
	Antares	W.	53 3 3	2084	54 54 27	2077	56 46 1	2071	58 37 45	2066
	a Pegasi	E.	52 8 38	2306	50 22 47	2316	48 37 11	2328	46 51 53	2344
	a Arietis	E.	94 40 34	2096	92 49 29	2092	90 58 17	2087	89 6 58	2084
	Mars	E.	97 12 38	2242	95 25 13	2237	93 37 40	2232	91 50 0	2229
20	Jupiter	W.	87 23 52	2028	89 16 43	2029	91 9 32	2030	93 2 19	2032
	Antares	W.	67 57 51	2054	69 50 1	2055	71 42 10	2055	73 34 18	2057
	a Pegasi	E.	38 12 38	2480	36 30 56	2522	34 50 14	2573	33 10 42	2634
	a Arietis	E.	79 49 32	2079	77 58 1	2081	76 6 33	2084	74 15 9	2086
	Mars	E.	82 50 40	2221	81 2 44	2221	79 14 48	2223	77 26 55	2225
21	Jupiter	W.	102 25 0	2054	104 17 10	2060	106 9 11	2066	108 1 2	2074
	Antares	W.	82 54 0	2076	84 45 36	2081	86 37 4	2088	88 28 21	2095
	a Aquilæ	W.	37 46 37	3317	39 10 28	3225	40 36 8	3145	42 3 23	3075
	a Arietis	E.	64 59 46	2116	63 9 11	2124	61 18 48	2133	59 28 39	2143
	Mars	E.	68 28 38	2247	66 41 20	2253	64 54 11	2260	63 7 12	2267

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
13	Saturn	W.	31° 0′ 56″	2781	32° 35′ 49″	2758	34° 11′ 12″	2736	35° 47′ 4″	2713
	Spica	W.	21 5 48	2696	22 42 33	2679	24 19 41	2662	25 57 12	2644
	Antares	E.	25 13 50	2860	23 40 40	2866	22 7 38	2877	20 34 50	2894
	a Aquilæ	E.	78 44 10	3124	77 16 29	3112	75 48 34	3101	74 20 26	3091
14	Sun	W.	123 19 17	2899	124 51 37	2880	126 24 21	2862	127 57 29	2842
	Regulus	W.	88 3 53	2574	89 43 24	2555	91 23 21	2537	93 3 43	2519
	Saturn	W.	43 53 39	2608	45 32 23	2588	47 11 35	2567	48 51 15	2548
	Spica	W.	34 10 51	2555	35 50 49	2536	37 31 12	2517	39 12 1	2499
	a Aquilæ	E.	66 56 51	3051	65 27 41	3045	63 58 24	3042	62 29 3	3040
	Fomalhaut	E.	95 51 25	3022	94 21 39	3001	92 51 27	2981	91 20 51	2962
15	Saturn	W.	57 16 27	2450	58 58 51	2430	60 41 43	2412	62 25 1	2394
	Spica	W.	47 42 33	2408	49 25 57	2389	51 9 47	2371	52 54 3	2354
	Jupiter	W.	21 47 24	2412	23 30 42	2393	25 14 27	2375	26 58 37	2357
	a Aquilæ	E.	55 2 30	3060	53 33 32	3072	52 4 48	3087	50 36 23	3106
	Fomalhaut	E.	83 42 7	2878	82 9 20	2864	80 36 15	2851	79 2 53	2839
16	Saturn	W.	71 8 1	2306	72 53 52	2289	74 40 8	2273	76 26 47	2257
	Spica	W.	61 41 40	2269	63 28 25	2253	65 15 34	2237	67 3 7	2222
	Jupiter	W.	35 45 51	2272	37 32 32	2256	39 19 36	2240	41 7 4	2225
	a Aquilæ	E.	43 22 4	3282	41 57 32	3340	40 34 7	3408	39 12 0	3488
	Fomalhaut	E.	71 12 40	2796	69 38 9	2794	68 3 33	2792	66 28 54	2792
	a Pegasi	E.	87 13 57	2426	85 30 59	2410	83 47 39	2396	82 3 58	2382
17	Saturn	W.	85 25 39	2186	87 14 27	2174	89 3 34	2162	90 52 59	2150
	Spica	W.	76 6 20	2151	77 56 1	2139	79 46 0	2128	81 36 17	2116
	Jupiter	W.	50 9 52	2155	51 59 27	2143	53 49 21	2131	55 39 33	2120
	Antares	W.	31 9 8	2250	32 56 21	2229	34 44 6	2208	36 32 21	2191
	Fomalhaut	E.	58 36 38	2828	57 2 46	2843	55 29 14	2863	53 56 8	2887
	a Pegasi	E.	73 20 57	2324	71 35 33	2316	69 49 57	2308	68 4 9	2302
18	Spica	W.	90 51 47	2068	92 43 35	2061	94 35 34	2053	96 27 45	2047
	Jupiter	W.	64 54 34	2072	66 46 16	2065	68 38 9	2058	70 30 13	2052
	Antares	W.	45 39 39	2120	47 30 7	2109	49 20 52	2100	51 11 51	2092
	Fomalhaut	E.	46 20 23	3089	44 52 0	3151	43 24 52	3223	41 59 10	3306
	a Pegasi	E.	59 13 22	2288	57 27 5	2289	55 40 50	2293	53 54 40	2298
19	Jupiter	W.	79 52 37	2031	81 45 23	2030	83 38 11	2028	85 31 1	2028
	Antares	W.	60 29 36	2062	62 21 34	2059	64 13 36	2057	66 5 42	2055
	a Pegasi	E.	45 6 57	2362	43 22 28	2384	41 38 31	2411	39 55 12	2443
	a Arietis	E.	87 15 34	2081	85 24 6	2080	83 32 36	2079	81 41 4	2079
	Mars	E.	90 2 15	2225	88 14 25	2223	86 26 32	2221	84 38 36	2221
20	Jupiter	W.	94 55 3	2035	96 47 42	2039	98 40 15	2044	100 32 41	2048
	Antares	W.	75 26 24	2059	77 18 26	2062	79 10 23	2066	81 2 15	2070
	a Pegasi	E.	31 32 33	2706	29 56 1	2792	28 21 22	2894	26 48 56	3018
	a Arietis	E.	72 23 49	2091	70 32 36	2096	68 41 30	2101	66 50 33	2108
	Mars	E.	75 39 5	2228	73 51 19	2232	72 3 39	2236	70 16 5	2241
21	Jupiter	W.	109 52 41	2082	111 44 8	2090	113 35 22	2099	115 26 23	2109
	Antares	W.	90 19 28	2103	92 10 23	2111	94 1 5	2120	95 51 33	2130
	a Aquilæ	W.	43 32 3	3016	45 1 56	2965	46 32 53	2920	48 4 46	2883
	a Arietis	E.	57 38 46	2154	55 49 9	2166	53 59 50	2179	52 10 51	2193
	Mars	E.	61 20 24	2275	59 33 48	2284	57 47 25	2294	56 1 16	2303

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
21	Aldebaran E.	97° 57′ 46″	2057	96° 5′ 40″	2062	94° 13′ 43″	2069	92° 21′ 56″	2076
22	Antares W.	97 41 47	2139	99 31 46	2151	101 21 28	2161	103 10 54	2173
	α Aquilæ W.	49 37 27	2851	51 10 49	2823	52 44 47	2801	54 19 14	2781
	α Arietis E.	50 22 13	2207	48 33 56	2223	46 46 3	2241	44 58 36	2259
	Mars E.	54 15 21	2313	52 29 41	2324	50 44 16	2335	48 59 8	2347
	Aldebaran E.	83 6 2	2120	81 15 33	2130	79 25 20	2141	77 35 23	2152
	Sun E.	134 24 46	2432	132 41 57	2442	130 59 22	2452	129 17 1	2462
23	α Aquilæ W.	62 16 25	2731	63 52 24	2727	65 28 28	2726	67 4 33	2727
	Fomalhaut W.	36 53 2	3779	38 8 26	3671	39 25 44	3576	40 44 45	3492
	α Arietis E.	36 8 43	2373	34 24 30	2403	32 40 59	2436	30 58 14	2471
	Mars E.	40 17 56	2412	38 34 39	2426	36 51 41	2441	35 9 4	2456
	Aldebaran E.	68 30 4	2214	66 41 57	2227	64 54 10	2241	63 6 43	2254
	Sun E.	120 49 12	2522	119 8 30	2536	117 28 7	2550	115 48 3	2564
24	α Aquilæ W.	75 4 9	2750	76 39 43	2758	78 15 6	2766	79 50 18	2777
	Fomalhaut W.	47 39 7	3225	49 4 46	3192	50 31 5	3163	51 57 58	3139
	α Pegasi W.	27 44 48	3110	29 12 45	3043	30 42 5	2987	32 12 34	2942
	Mars E.	26 41 21	2535	25 0 56	2551	23 20 54	2569	21 41 17	2588
	Aldebaran E.	54 14 38	2326	52 29 17	2342	50 44 18	2357	48 59 41	2372
	Sun E.	107 32 39	2638	105 54 35	2652	104 16 51	2667	102 39 27	2683
25	α Aquilæ W.	87 42 40	2838	89 16 19	2852	90 49 40	2866	92 22 42	2881
	Fomalhaut W.	59 18 12	3069	60 47 0	3062	62 15 56	3058	63 44 57	3055
	α Pegasi W.	39 56 8	2819	41 30 11	2808	43 4 29	2800	44 38 57	2796
	Aldebaran E.	40 22 6	2450	38 39 43	2466	36 57 42	2482	35 16 4	2499
	Sun E.	94 37 40	2761	93 2 21	2776	91 27 22	2792	89 52 43	2807
26	Fomalhaut W.	71 10 24	3060	72 39 23	3065	74 8 16	3069	75 37 3	3075
	α Pegasi W.	52 32 16	2793	54 6 53	2796	55 41 26	2800	57 15 54	2805
	Aldebaran E.	26 53 44	2586	25 14 30	2604	23 35 41	2625	21 57 20	2648
	Sun E.	82 4 29	2883	80 31 49	2898	78 59 28	2913	77 27 26	2927
27	Fomalhaut W.	82 58 51	3115	84 26 42	3125	85 54 21	3135	87 21 48	3146
	α Pegasi W.	65 6 19	2838	66 39 58	2846	68 13 26	2854	69 46 44	2862
	α Arietis W.	21 46 21	3056	23 15 25	3017	24 45 17	2988	26 15 45	2965
	Sun E.	69 51 47	2999	68 21 33	3013	66 51 36	3026	65 21 55	3039
28	Fomalhaut W.	94 35 39	3206	96 1 41	3220	97 27 27	3234	98 52 56	3248
	α Pegasi W.	77 30 32	2905	79 2 44	2914	80 34 45	2924	82 6 34	2933
	α Arietis W.	33 53 10	2916	35 25 8	2914	36 57 9	2912	38 29 12	2913
	Mars W.	24 31 53	2980	26 2 31	2989	27 32 57	2999	29 3 11	3008
	Sun E.	57 57 35	3104	56 29 30	3116	55 1 40	3129	53 34 5	3141
29	α Pegasi W.	89 42 45	2979	91 13 24	2989	92 43 51	2997	94 14 7	3007
	α Arietis W.	46 8 59	2926	47 40 45	2930	49 12 26	2935	50 44 1	2939
	Mars W.	36 31 28	3055	38 0 33	3064	39 29 27	3072	40 58 11	3081
	Sun E.	46 19 48	3200	44 53 39	3211	43 27 43	3223	42 2 1	3234
30	α Arietis W.	58 20 25	2965	59 51 22	2969	61 22 13	2976	62 52 56	2981
	Mars W.	48 19 12	3122	49 46 55	3129	51 14 29	3138	52 41 53	3144
	Aldebaran W.	24 48 2	2933	26 19 39	2936	27 51 12	2940	29 22 40	2944
	Sun E.	34 56 57	3294	33 32 38	3306	32 8 34	3319	30 44 45	3332

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	Aldebaran	E.	90° 30′ 20″	2084	88° 38′ 56″	2092	86° 47′ 44″	2101	84° 56′ 46″	2110
22	Antares	W.	105 0 2	2185	106 48 52	2197	108 37 24	2210	110 25 36	2223
	a Aquilæ	W.	55 54 7	2766	57 29 20	2753	59 4 50	2743	60 40 33	2736
	a Arietis	E.	43 11 36	2278	41 25 4	2299	39 39 3	2322	37 53 35	2346
	Mars	E.	47 14 17	2359	45 29 44	2372	43 45 29	2385	42 1 33	2398
	Aldebaran	E.	75 45 43	2164	73 56 21	2176	72 7 17	2188	70 18 31	2200
	SUN	E.	127 34 54	2473	125 53 3	2485	124 11 29	2497	122 30 12	2510
23	*a* Aquilæ	W.	68 40 37	2729	70 16 38	2732	71 52 35	2737	73 28 26	2743
	Fomalhaut	W.	42 5 18	3422	43 27 10	3361	44 50 11	3308	46 14 13	3264
	a Arietis	E.	29 16 20	2512	27 35 23	2558	25 55 30	2611	24 16 50	2674
	Mars	E.	33 26 48	2470	31 44 53	2486	30 3 20	2502	28 22 9	2518
	Aldebaran	E.	61 19 36	2268	59 32 50	2283	57 46 25	2297	56 0 21	2311
	SUN	E.	114 8 19	2578	112 28 54	2593	110 49 49	2607	109 11 4	2622
24	*a* Aquilæ	W.	81 25 16	2788	83 0 0	2799	84 34 29	2811	86 8 43	2824
	Fomalhaut	W.	53 25 20	3119	54 53 6	3103	56 21 12	3089	57 49 35	3078
	a Pegasi	W.	33 44 0	2905	35 16 13	2876	36 49 3	2852	38 22 23	2833
	Mars	E.	20 2 5	2607	18 23 20	2628	16 45 3	2650	15 7 16	2675
	Aldebaran	E.	47 15 26	2387	45 31 32	2403	43 48 1	2418	42 4 52	2434
	SUN	E.	101 2 24	2698	99 25 42	2714	97 49 21	2729	96 13 20	2745
25	*a* Aquilæ	W.	93 55 25	2898	95 27 47	2914	96 59 48	2931	98 31 27	2949
	Fomalhaut	W.	65 14 2	3053	66 43 9	3053	68 12 16	3055	69 41 21	3056
	a Pegasi	W.	46 13 32	2791	47 48 12	2789	49 22 54	2789	50 57 36	2791
	Aldebaran	E.	33 34 49	2515	31 53 57	2533	30 13 29	2549	28 33 24	2567
	SUN	E.	88 18 24	2822	86 44 25	2838	85 10 47	2853	83 37 28	2869
26	Fomalhaut	W.	77 5 43	3082	78 34 14	3090	80 2 36	3097	81 30 49	3106
	a Pegasi	W.	58 50 15	2811	60 24 29	2818	61 58 34	2824	63 32 31	2831
	Aldebaran	E.	20 19 30	2672	18 42 12	2698	17 5 29	2729	15 29 27	2766
	SUN	E.	75 55 42	2942	74 24 16	2957	72 53 9	2970	71 22 19	2985
27	Fomalhaut	W.	88 49 2	3157	90 16 3	3168	91 42 50	3181	93 9 22	3193
	a Pegasi	W.	71 19 52	2870	72 52 49	2879	74 25 35	2888	75 58 9	2897
	a Arietis	W.	27 46 41	2949	29 17 58	2935	30 49 32	2927	32 21 17	2920
	SUN	E.	63 52 31	3052	62 23 23	3065	60 54 31	3078	59 25 55	3091
28	Fomalhaut	W.	100 18 8	3264	101 43 2	3278	103 7 39	3294	104 31 58	3310
	a Pegasi	W.	83 38 11	2942	85 9 37	2951	86 40 51	2960	88 11 54	2969
	a Arietis	W.	40 1 14	2914	41 33 15	2916	43 5 13	2919	44 37 8	2922
	Mars	W.	30 33 14	3018	32 3 5	3027	33 32 44	3036	35 2 12	3046
	SUN	E.	52 6 45	3153	50 39 39	3166	49 12 48	3177	47 46 11	3188
29	*a* Pegasi	W.	95 44 11	3017	97 14 3	3026	98 43 43	3035	100 13 12	3045
	a Arietis	W.	52 15 30	2944	53 46 53	2949	55 18 10	2954	56 49 21	2959
	Mars	W.	42 26 44	3090	43 55 6	3098	45 23 18	3106	46 51 20	3114
	SUN	E.	40 36 32	3246	39 11 17	3259	37 46 17	3270	36 21 30	3282
30	*a* Arietis	W.	64 23 32	2986	65 54 2	2992	67 24 25	2997	68 54 41	3002
	Mars	W.	54 9 9	3152	55 36 16	3159	57 3 14	3166	58 30 4	3173
	Aldebaran	W.	30 54 3	2949	32 25 20	2953	33 56 32	2958	35 27 38	2963
	SUN	E.	29 21 11	3346	27 57 53	3361	26 34 52	3377	25 12 9	3393

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	8 47 24.85	9.703	N.17 54 33.2	38.14	15 48.08	66.61	6 0.81	0.154
Tues.	2	8 51 17.40	9.678	17 39 8.9	38.87	15 48.21	66.52	5 56.81	0.179
Wed.	3	8 55 9.35	9.652	17 23 27.4	39.58	15 48.35	66.43	5 52.21	0.204
Thur.	4	8 59 0.68	9.627	17 7 29.0	40.28	15 48.49	66.34	5 47.00	0.229
Fri.	5	9 2 51.40	9.602	16 51 14.1	40.96	15 48.63	66.25	5 41.19	0.254
Sat.	6	9 6 41.52	9.577	16 34 42.8	41.64	15 48.78	66.16	5 34.78	0.279
Sun.	7	9 10 31.04	9.552	16 17 55.4	42.30	15 48.93	66.08	5 27.76	0.304
Mon.	8	9 14 19.96	9.527	16 0 52.5	42.95	15 49.09	66.00	5 20.14	0.329
Tues.	9	9 18 8.29	9.502	15 43 34.1	43.58	15 49.25	65.90	5 11.93	0.354
Wed.	10	9 21 56.02	9.477	15 26 0.7	44.20	15 49.41	65.83	5 3.13	0.379
Thur.	11	9 25 43.16	9.452	15 8 12.6	44.81	15 49.58	65.75	4 53.75	0.403
Fri.	12	9 29 29.71	9.429	14 50 9.9	45.41	15 49.75	65.67	4 43.78	0.427
Sat.	13	9 33 15.69	9.406	14 31 53.1	45.99	15 49.93	65.59	4 33.23	0.451
Sun.	14	9 37 1.11	9.383	14 13 22.6	46.56	15 50.11	65.51	4 22.13	0.474
Mon.	15	9 40 45.99	9.360	13 54 38.6	47.12	15 50.30	65.43	4 10.49	0.496
Tues.	16	9 44 30.35	9.338	13 35 41.2	47.67	15 50.49	65.35	3 58.32	0.518
Wed.	17	9 48 14.19	9.317	13 16 30.7	48.20	15 50.68	65.28	3 45.63	0.539
Thur.	18	9 51 57.51	9.296	12 57 7.7	48.72	15 50.87	65.21	3 32.44	0.560
Fri.	19	9 55 40.34	9.276	12 37 32.4	49.23	15 51.07	65.14	3 18.75	0.580
Sat.	20	9 59 22.69	9.257	12 17 44.9	49.73	15 51.27	65.07	3 4.59	0.599
Sun.	21	10 3 4.59	9.238	11 57 45.6	50.21	15 51.47	65.00	2 49.97	0.618
Mon.	22	10 6 46.04	9.220	11 37 34.9	50.68	15 51.67	64.93	2 34.91	0.636
Tues.	23	10 10 27.07	9.202	11 17 13.0	51.14	15 51.88	64.87	2 19.43	0.654
Wed.	24	10 14 7.69	9.185	10 56 40.4	51.59	15 52.09	64.81	2 3.53	0.670
Thur.	25	10 17 47.91	9.169	10 35 57.2	52.02	15 52.30	64.75	1 47.24	0.686
Fri.	26	10 21 27.75	9.154	10 15 3.9	52.44	15 52.51	64.69	1 30.58	0.702
Sat.	27	10 25 7.22	9.139	9 54 0.7	52.85	15 52.72	64.63	1 13.55	0.717
Sun.	28	10 28 46.33	9.124	9 32 47.9	53.24	15 52.93	64.58	0 56.16	0.732
Mon.	29	10 32 25.10	9.110	9 11 25.8	53.61	15 53.15	64.53	0 38.42	0.746
Tues.	30	10 36 3.55	9.097	8 49 55.0	53.97	15 53.37	64.48	0 20.36	0.759
Wed.	31	10 39 41.69	9.084	8 28 15.7	54.32	15 53.61	64.43	0 1.99	0.772
Thur.	32	10 43 19.52	9.072	N. 8 6 28.2	54.65	15 53.83	64.39	0 16.68	0.784

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from / added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	8 47 23.88	9.703	N.17 54 37.1	38.14	6 0.82	0.154	8 41 23.06
Tues.	2	8 51 16.44	9.678	17 39 12.8	38.87	5 56.83	0.179	8 45 19.61
Wed.	3	8 55 8.40	9.652	17 23 31.3	39.58	5 52.23	0.204	8 49 16.17
Thur.	4	8 58 59.75	9.627	17 7 32.9	40.28	5 47.02	0.229	8 53 12.73
Fri.	5	9 2 50.49	9.602	16 51 18.0	40.96	5 41.21	0.254	8 57 9.28
Sat.	6	9 6 40.63	9.577	16 34 46.7	41.64	5 34.80	0.279	9 1 5.83
Sun.	7	9 10 30.17	9.552	16 17 59.3	42.30	5 27.78	0.304	9 5 2.39
Mon.	8	9 14 19.11	9.527	16 0 56.3	42.95	5 20.17	0.329	9 8 58.94
Tues.	9	9 18 7.46	9.502	15 43 37.9	43.58	5 11.96	0.354	9 12 55.50
Wed.	10	9 21 55.22	9.477	15 26 4.5	44.20	5 3.17	0.379	9 16 52.05
Thur.	11	9 25 42.39	9.453	15 8 16.3	44.81	4 53.78	0.403	9 20 48.61
Fri.	12	9 29 28.97	9.429	14 50 13.5	45.41	4 43.81	0.427	9 24 45.16
Sat.	13	9 33 14.98	9.406	14 31 56.4	45.99	4 33.26	0.451	9 28 41.72
Sun.	14	9 37 0.43	9.383	14 13 26.0	46.56	4 22.16	0.474	9 32 38.27
Mon.	15	9 40 45.34	9.360	13 54 41.9	47.12	4 10.52	0.496	9 36 34.82
Tues.	16	9 44 29.73	9.338	13 35 44.4	47.67	3 58.35	0.518	9 40 31.38
Wed.	17	9 48 13.60	9.317	13 16 33.8	48.20	3 45.67	0.539	9 44 27.93
Thur.	18	9 51 56.96	9.296	12 57 10.6	48.72	3 32.47	0.560	9 48 24.49
Fri.	19	9 55 39.82	9.276	12 37 35.1	49.23	3 18.78	0.580	9 52 21.04
Sat.	20	9 59 22.21	9.257	12 17 47.4	49.73	3 4.62	0.599	9 56 17.59
Sun.	21	10 3 4.15	9.238	11 57 47.9	50.21	2 50.00	0.618	10 0 14.15
Mon.	22	10 6 45.64	9.220	11 37 37.0	50.68	2 34.94	0.636	10 4 10.70
Tues.	23	10 10 26.71	9.202	11 17 15.0	51.14	2 19.46	0.654	10 8 7.25
Wed.	24	10 14 7.37	9.185	10 56 42.2	51.59	2 3.56	0.670	10 12 3.81
Thur.	25	10 17 47.63	9.169	10 35 58.8	52.02	1 47.27	0.686	10 16 0.36
Fri.	26	10 21 27.51	9.154	10 15 5.3	52.44	1 30.59	0.702	10 19 56.92
Sat.	27	10 25 7.03	9.139	9 54 1.8	52.85	1 13.56	0.717	10 23 53.47
Sun.	28	10 28 46.19	9.124	9 32 48.7	53.24	0 56.17	0.732	10 27 50.02
Mon.	29	10 32 25.00	9.110	9 11 26.4	53.61	0 38.43	0.746	10 31 46.57
Tues.	30	10 36 3.49	9.097	8 49 55.3	53.97	0 20.36	0.759	10 35 43.13
Wed.	31	10 39 41.68	9.084	8 28 15.7	54.32	0 2.00	0.772	10 39 39.68
Thur.	32	10 43 19.56	9.072	N. 8 6 27.9	54.65	0 16.67	0.784	10 43 36.23

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ	THE SUN'S True LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	214	129 24 50.5	24 7.7	143.64	−0.79	0.0063306	24.4	15 16 6.45
2	215	130 22 18.3	21 35.4	143.68	0.81	.0062707	25.4	15 12 10.54
3	216	131 19 47.1	19 4.1	143.72	0.80	.0062083	26.5	15 8 14.63
4	217	132 17 16.9	16 33.7	143.76	0.76	.0061435	27.5	15 4 18.72
5	218	133 14 47.6	14 4.3	143.80	0.69	.0060764	28.4	15 0 22.81
6	219	134 12 19.2	11 35.8	143.84	0.60	.0060071	29.3	14 56 26.90
7	220	135 9 51.7	9 8.2	143.88	0.49	.0059356	30.2	14 52 31.00
8	221	136 7 25.2	6 41.6	143.92	0.36	.0058620	31.0	14 48 35.09
9	222	137 4 59.5	4 15.7	143.96	0.23	.0057864	31.8	14 44 39.18
10	223	138 2 34.7	1 50.8	143.99	−0.10	.0057091	32.5	14 40 43.27
11	224	138 60 10.8	59 26.8	144.03	+0.04	.0056302	33.1	14 36 47.36
12	225	139 57 47.9	57 3.8	144.07	0.17	.0055498	33.7	14 32 51.45
13	226	140 55 26.0	54 41.8	144.11	0.27	.0054681	34.3	14 28 55.54
14	227	141 53 5.1	52 20.7	144.15	0.35	.0053852	34.8	14 24 59.63
15	228	142 50 45.3	50 0.8	144.20	0.40	.0053012	35.2	14 21 3.72
16	229	143 48 26.8	47 42.2	144.25	0.42	.0052161	35.6	14 17 7.81
17	230	144 46 9.6	45 24.9	144.31	0.41	.0051300	36.0	14 13 11.91
18	231	145 43 53.7	43 8.9	144.37	0.37	.0050431	36.4	14 9 16.01
19	232	146 41 39.2	40 54.3	144.43	0.30	.0049553	36.8	14 5 20.09
20	233	147 39 26.3	38 41.3	144.49	0.21	.0048666	37.2	14 1 24.18
21	234	148 37 15.0	36 29.9	144.56	+0.10	.0047770	37.6	13 57 28.28
22	235	149 35 5.3	34 20.1	144.63	−0.02	.0046864	38.0	13 53 32.38
23	236	150 32 57.4	32 12.1	144.71	0.15	.0045947	38.5	13 49 36.47
24	237	151 30 51.3	30 5.9	144.78	0.28	.0045018	39.0	13 45 40.56
25	238	152 28 47.1	28 1.6	144.86	0.40	.0044075	39.5	13 41 44.65
26	239	153 26 44.7	25 59.1	144.94	0.50	.0043119	40.1	13 37 48.74
27	240	154 24 44.2	23 58.5	145.02	0.59	.0042148	40.7	13 33 52.84
28	241	155 22 45.5	21 59.7	145.10	0.65	.0041162	41.4	13 29 56.93
29	242	156 20 48.6	20 2.7	145.17	0.68	.0040159	42.1	13 26 1.02
30	243	157 18 53.5	18 7.5	145.24	0.68	.0039139	42.8	13 22 5.11
31	244	158 17 0.2	16 14.1	145.31	0.65	.0038100	43.6	13 18 9.21
32	245	159 15 8.6	14 22.4	145.38	−0.59	0.0037045	44.3	13 14 13.31

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 52.3	14 50.0	54 27.9	−0.73	54 19.8	−0.63	23 55.7	1.86	28.5
2	14 48.1	14 46.6	54 12.8	0.53	54 7.0	0.43	δ		29.5
3	14 45.4	14 44.5	54 2.6	0.32	53 59.4	−0.21	0 39.6	1.80	0.9
4	14 44.0	14 43.9	53 57.6	−0.09	53 57.4	+0.04	1 22.2	1.75	1.9
5	14 44.3	14 45.1	53 58.7	+0.18	54 1.8	0.33	2 4.0	1.73	2.9
6	14 46.5	14 48.4	54 6.7	0.49	54 13.6	0.66	2 45.6	1.74	3.9
7	14 50.8	14 53.8	54 22.5	0.83	54 33.5	1.01	3 27.9	1.78	4.9
8	14 57.4	15 1.6	54 46.7	1.19	55 2.2	1.38	4 11.5	1.85	5.9
9	15 6.4	15 11.8	55 19.8	1.56	55 39.6	1.74	4 57.2	1.95	6.9
10	15 17.7	15 24.2	56 1.5	1.91	56 25.3	2.06	5 45.5	2.08	7.9
11	15 31.2	15 38.6	56 50.9	2.10	57 17.9	2.31	6 37.0	2.21	8.9
12	15 46.2	15 54.1	57 46.1	2.38	58 14.9	2.42	7 31.5	2.33	9.9
13	16 2.0	16 9.7	58 43.9	2.41	59 12.4	2.34	8 28.6	2.42	10.9
14	16 17.2	16 24.2	59 39.8	2.22	60 5.4	2.04	9 27.2	2.46	11.9
15	16 30.4	16 35.8	60 28.4	1.79	60 48.2	1.49	10 26.2	2.45	12.9
16	16 40.1	16 43.3	61 4.1	1.15	61 15.6	+0.76	11 24.5	2.41	13.9
17	16 45.1	16 45.6	61 22.4	+0.35	61 24.1	−0.07	12 21.5	2.35	14.9
18	16 44.7	16 42.5	61 20.8	−0.48	61 12.6	0.88	13 17.2	2.30	15.9
19	16 39.0	16 34.4	60 59.8	1.24	60 43.0	1.56	14 11.8	2.26	16.9
20	16 28.8	16 22.5	60 22.6	1.83	59 59.4	2.03	15 5.8	2.24	17.9
21	16 15.6	16 8.3	59 34.0	2.18	59 7.2	2.28	15 59.5	2.23	18.9
22	16 0.8	15 53.3	58 39.6	2.31	58 11.9	2.30	16 53.0	2.22	19.9
23	15 45.8	15 38.5	57 44.5	2.26	57 17.9	2.17	17 46.3	2.21	20.9
24	15 31.6	15 25.1	56 52.5	2.06	56 28.6	1.93	18 38.8	2.17	21.9
25	15 19.0	15 13.4	56 6.2	1.79	55 45.5	1.64	19 30.2	2.11	22.9
26	15 8.3	15 3.7	55 26.7	1.49	55 9.8	1.33	20 19.9	2.04	23.9
27	14 59.6	14 56.0	54 54.8	1.18	54 41.5	1.03	21 7.8	1.96	24.9
28	14 52.9	14 50.2	54 30.1	0.88	54 20.5	0.74	21 53.8	1.88	25.9
29	14 48.1	14 46.8	54 12.4	0.60	54 6.1	0.46	22 38.1	1.81	26.9
30	14 45.0	14 44.1	54 1.3	0.34	53 57.9	−0.22	23 21.0	1.77	27.9
31	14 43.6	14 43.4	53 56.0	−0.11	53 55.4	0.00	δ		28.9
32	14 43.6	14 44.2	53 56.1	+0.11	53 58.1	+0.22	0 3.1	1.74	0.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 1.					WEDNESDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 52 58.25	2.0420	N.16 3 43.4	6.466	0	9 27 41.65	1.9120	N. 9 45 36.9	9.032
1	7 55 0.68	2.0390	15 57 13.4	6.535	1	9 29 36.30	1.9098	9 36 33.9	9.069
2	7 57 2.93	2.0360	15 50 39.2	6.603	2	9 31 30.83	1.9077	9 27 28.6	9.106
3	7 59 5.00	2.0330	15 44 1.0	6.671	3	9 33 25.24	1.9057	9 18 21.2	9.142
4	8 1 6.89	2.0300	15 37 18.7	6.738	4	9 35 19.52	1.9037	9 9 11.6	9.177
5	8 3 8.60	2.0269	15 30 32.4	6.805	5	9 37 13.68	1.9017	8 59 59.9	9.212
6	8 5 10.12	2.0238	15 23 42.1	6.871	6	9 39 7.72	1.8997	8 50 46.2	9.245
7	8 7 11.46	2.0208	15 16 47.9	6.936	7	9 41 1.64	1.8977	8 41 30.5	9.278
8	8 9 12.62	2.0178	15 9 49.8	7.001	8	9 42 55.45	1.8958	8 32 12.8	9.311
9	8 11 13.60	2.0149	15 2 47.8	7.065	9	9 44 49.14	1.8939	8 22 53.2	9.343
10	8 13 14.41	2.0119	14 55 42.0	7.128	10	9 46 42.72	1.8920	8 13 31.6	9.375
11	8 15 15.03	2.0089	14 48 32.5	7.190	11	9 48 36.19	1.8902	8 4 8.2	9.406
12	8 17 15.48	2.0059	14 41 19.2	7.251	12	9 50 29.55	1.8884	7 54 42.9	9.436
13	8 19 15.75	2.0030	14 34 2.3	7.312	13	9 52 22.81	1.8867	7 45 15.9	9.465
14	8 21 15.84	2.0001	14 26 41.7	7.373	14	9 54 15.96	1.8850	7 35 47.1	9.494
15	8 23 15.76	1.9972	14 19 17.5	7.433	15	9 56 9.01	1.8834	7 26 16.6	9.522
16	8 25 15.50	1.9942	14 11 49.7	7.492	16	9 58 1.97	1.8818	7 16 44.4	9.550
17	8 27 15.07	1.9913	14 4 18.4	7.551	17	9 59 54.83	1.8802	7 7 10.6	9.577
18	8 29 14.46	1.9884	13 56 43.6	7.609	18	10 1 47.59	1.8787	6 57 35.2	9.603
19	8 31 13.68	1.9856	13 49 5.4	7.666	19	10 3 40.26	1.8772	6 47 58.2	9.629
20	8 33 12.73	1.9828	13 41 23.7	7.722	20	10 5 32.85	1.8757	6 38 19.7	9.654
21	8 35 11.62	1.9800	13 33 38.7	7.778	21	10 7 25.35	1.8742	6 28 39.7	9.679
22	8 37 10.33	1.9771	13 25 50.3	7.833	22	10 9 17.76	1.8728	6 18 58.2	9.703
23	8 39 8.87	1.9743	N.13 17 58.7	7.887	23	10 11 10.09	1.8714	N. 6 9 15.3	9.726
	TUESDAY 2.					THURSDAY 4.			
0	8 41 7.25	1.9715	N.13 10 3.8	7.941	0	10 13 2.33	1.8701	N. 5 59 31.1	9.748
1	8 43 5.46	1.9688	13 2 5.7	7.994	1	10 14 54.50	1.8688	5 49 45.5	9.770
2	8 45 3.51	1.9660	12 54 4.5	8.047	2	10 16 46.59	1.8675	5 39 58.7	9.791
3	8 47 1.39	1.9633	12 46 0.1	8.099	3	10 18 38.61	1.8663	5 30 10.6	9.812
4	8 48 59.11	1.9606	12 37 52.6	8.150	4	10 20 30.55	1.8651	5 20 21.2	9.833
5	8 50 56.67	1.9580	12 29 42.1	8.201	5	10 22 22.42	1.8640	5 10 30.6	9.852
6	8 52 54.07	1.9554	12 21 28.5	8.250	6	10 24 14.23	1.8629	5 0 38.9	9.871
7	8 54 51.31	1.9527	12 13 12.0	8.299	7	10 26 5.98	1.8619	4 50 46.1	9.889
8	8 56 48.40	1.9502	12 4 52.6	8.347	8	10 27 57.66	1.8609	4 40 52.2	9.907
9	8 58 45.33	1.9476	11 56 30.3	8.395	9	10 29 49.29	1.8600	4 30 57.2	9.925
10	9 0 42.11	1.9450	11 48 5.2	8.442	10	10 31 40.86	1.8591	4 21 1.2	9.941
11	9 2 38.73	1.9424	11 39 37.3	8.488	11	10 33 32.38	1.8582	4 11 4.3	9.957
12	9 4 35.20	1.9399	11 31 6.6	8.534	12	10 35 23.84	1.8573	4 1 6.4	9.972
13	9 6 31.52	1.9374	11 22 33.2	8.579	13	10 37 15.25	1.8565	3 51 7.6	9.987
14	9 8 27.69	1.9350	11 13 57.1	8.624	14	10 39 6.62	1.8557	3 41 8.0	10.001
15	9 10 23.72	1.9326	11 5 18.3	8.668	15	10 40 57.94	1.8550	3 31 7.5	10.014
16	9 12 19.60	1.9302	10 56 36.9	8.711	16	10 42 49.22	1.8543	3 21 6.3	10.027
17	9 14 15.34	1.9278	10 47 53.0	8.753	17	10 44 40.46	1.8537	3 11 4.3	10.040
18	9 16 10.94	1.9255	10 39 6.5	8.795	18	10 46 31.67	1.8531	3 1 1.5	10.051
19	9 18 6.40	1.9232	10 30 17.5	8.837	19	10 48 22.84	1.8526	2 50 58.1	10.062
20	9 20 1.72	1.9209	10 21 26.1	8.877	20	10 50 13.98	1.8521	2 40 54.0	10.073
21	9 21 56.90	1.9186	10 12 32.3	8.916	21	10 52 5.09	1.8516	2 30 49.3	10.083
22	9 23 51.95	1.9164	10 3 36.2	8.955	22	10 53 56.17	1.8512	2 20 44.0	10.093
23	9 25 46.87	1.9142	9 54 37.7	8.994	23	10 55 47.23	1.8508	2 10 38.2	10.102
24	9 27 41.65	1.9120	N. 9 45 36.9	9.032	24	10 57 38.27	1.8505	N. 2 0 31.8	10.110

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	10 57 38.27	1.8505	N. 2 0 31.8	10.110
1	10 59 29.29	1.8502	1 50 25.0	10.117
2	11 1 20.30	1.8500	1 40 17.8	10.124
3	11 3 11.30	1.8498	1 30 10.2	10.130
4	11 5 2.28	1.8496	1 20 2.2	10.136
5	11 6 53.25	1.8495	1 9 53.8	10.142
6	11 8 44.22	1.8495	0 59 45.2	10.146
7	11 10 35.19	1.8495	0 49 36.3	10.150
8	11 12 26.16	1.8495	0 39 27.2	10.154
9	11 14 17.13	1.8496	0 29 17.9	10.157
10	11 16 8.11	1.8497	0 19 8.4	10.159
11	11 17 59.10	1.8499	N. 0 8 58.8	10.161
12	11 19 50.10	1.8501	S. 0 1 10.9	10.162
13	11 21 41.12	1.8504	0 11 20.6	10.162
14	11 23 32.15	1.8507	0 21 30.3	10.162
15	11 25 23.20	1.8510	0 31 40.0	10.162
16	11 27 14.27	1.8514	0 41 49.7	10.160
17	11 29 5.37	1.8518	0 51 59.3	10.158
18	11 30 56.49	1.8523	1 2 8.7	10.156
19	11 32 47.65	1.8529	1 12 18.0	10.153
20	11 34 38.84	1.8535	1 22 27.1	10.149
21	11 36 30.07	1.8542	1 32 35.9	10.145
22	11 38 21.34	1.8549	1 42 44.5	10.141
23	11 40 12.65	1.8556	S. 1 52 52.8	10.136

SATURDAY 6.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	11 42 4.01	1.8564	S. 2 3 0.8	10.130
1	11 43 55.41	1.8572	2 13 8.4	10.123
2	11 45 46.87	1.8580	2 23 15.6	10.116
3	11 47 38.38	1.8589	2 33 22.3	10.108
4	11 49 29.94	1.8599	2 43 28.6	10.100
5	11 51 21.56	1.8609	2 53 34.4	10.092
6	11 53 13.25	1.8620	3 3 39.6	10.082
7	11 55 5.00	1.8631	3 13 44.2	10.072
8	11 56 56.82	1.8643	3 23 48.2	10.061
9	11 58 48.71	1.8655	3 33 51.5	10.050
10	12 0 40.68	1.8667	3 43 54.2	10.038
11	12 2 32.72	1.8680	3 53 56.1	10.026
12	12 4 24.84	1.8693	4 3 57.3	10.013
13	12 6 17.04	1.8707	4 13 57.7	9.999
14	12 8 9.33	1.8722	4 23 57.2	9.985
15	12 10 1.70	1.8737	4 33 55.9	9.970
16	12 11 54.17	1.8752	4 43 53.6	9.955
17	12 13 46.73	1.8768	4 53 50.4	9.939
18	12 15 39.39	1.8785	5 3 46.3	9.922
19	12 17 32.15	1.8802	5 13 41.1	9.905
20	12 19 25.01	1.8819	5 23 34.9	9.887
21	12 21 17.98	1.8837	5 33 27.6	9.869
22	12 23 11.06	1.8855	5 43 19.2	9.850
23	12 25 4.25	1.8874	5 53 9.6	9.830
24	12 26 57.55	1.8893	S. 6 2 58.8	9.810

SUNDAY 7.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	12 26 57.55	1.8893	S. 6 2 58.8	9.810
1	12 28 50.97	1.8913	6 12 46.8	9.789
2	12 30 44.50	1.8933	6 22 33.5	9.767
3	12 32 38.16	1.8954	6 32 18.9	9.745
4	12 34 31.95	1.8975	6 42 2.9	9.723
5	12 36 25.87	1.8997	6 51 45.6	9.700
6	12 38 19.92	1.9019	7 1 26.9	9.676
7	12 40 14.10	1.9042	7 11 6.7	9.651
8	12 42 8.42	1.9065	7 20 45.0	9.625
9	12 44 2.88	1.9088	7 30 21.7	9.599
10	12 45 57.48	1.9112	7 39 56.9	9.573
11	12 47 52.23	1.9137	7 49 30.5	9.546
12	12 49 47.13	1.9162	7 59 2.4	9.518
13	12 51 42.18	1.9188	8 8 32.7	9.490
14	12 53 37.39	1.9214	8 18 1.2	9.461
15	12 55 32.76	1.9241	8 27 28.0	9.431
16	12 57 28.28	1.9268	8 36 52.9	9.400
17	12 59 23.97	1.9295	8 46 16.0	9.369
18	13 1 19.82	1.9323	8 55 37.2	9.337
19	13 3 15.84	1.9351	9 4 56.5	9.305
20	13 5 12.03	1.9380	9 14 13.8	9.272
21	13 7 8.40	1.9409	9 23 29.1	9.238
22	13 9 4.94	1.9439	9 32 42.4	9.204
23	13 11 1.66	1.9469	S. 9 41 53.6	9.169

MONDAY 8.

Hour.	Right Ascension. h m s	Diff. for 1 m. s	Declination. ° ′ ″	Diff. for 1 m. ″
0	13 12 58.57	1.9500	S. 9 51 2.7	9.133
1	13 14 55.66	1.9531	10 0 9.6	9.096
2	13 16 52.94	1.9562	10 9 14.2	9.059
3	13 18 50.41	1.9594	10 18 16.6	9.022
4	13 20 48.07	1.9627	10 27 16.8	8.983
5	13 22 45.93	1.9660	10 36 14.6	8.944
6	13 24 43.99	1.9693	10 45 10.1	8.904
7	13 26 42.25	1.9727	10 54 3.1	8.863
8	13 28 40.72	1.9762	11 2 53.7	8.822
9	13 30 39.40	1.9797	11 11 41.8	8.780
10	13 32 38.28	1.9832	11 20 27.3	8.737
11	13 34 37.37	1.9867	11 29 10.2	8.693
12	13 36 36.68	1.9903	11 37 50.5	8.649
13	13 38 36.21	1.9939	11 46 28.1	8.604
14	13 40 35.95	1.9976	11 55 3.0	8.558
15	13 42 35.92	2.0013	12 3 35.1	8.512
16	13 44 36.11	2.0051	12 12 4.4	8.465
17	13 46 36.53	2.0089	12 20 30.8	8.417
18	13 48 37.18	2.0127	12 28 54.4	8.368
19	13 50 38.06	2.0166	12 37 15.0	8.319
20	13 52 39.17	2.0205	12 45 32.7	8.269
21	13 54 40.52	2.0245	12 53 47.3	8.218
22	13 56 42.11	2.0285	13 1 58.8	8.166
23	13 58 43.94	2.0326	13 10 7.2	8.114
24	14 0 46.02	2.0366	S. 13 18 12.5	8.061

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 9.					THURSDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 0 46.02	2.0366	S.13 18 12.5	8.061	0	15 43 46.50	2.2626	S.18 28 8.4	4.523
1	14 2 48.34	2.0407	13 26 14.5	8.007	1	15 46 2.40	2.2675	18 32 37.0	4.428
2	14 4 50.91	2.0449	13 34 13.3	7.952	2	15 48 18.60	2.2724	18 36 59.8	4.332
3	14 6 53.73	2.0491	13 42 8.7	7.896	3	15 50 35.09	2.2773	18 41 16.9	4.236
4	14 8 56.80	2.0533	13 50 0.8	7.840	4	15 52 51.88	2.2822	18 45 28.1	4.138
5	14 11 0.13	2.0576	13 57 49.5	7.782	5	15 55 8.96	2.2872	18 49 33.4	4.039
6	14 13 3.71	2.0619	14 5 34.7	7.724	6	15 57 26.34	2.2921	18 53 32.8	3.939
7	14 15 7.55	2.0662	14 13 16.4	7.665	7	15 59 44.01	2.2970	18 57 26.2	3.839
8	14 17 11.65	2.0705	14 20 54.5	7.605	8	16 2 1.98	2.3019	19 1 13.5	3.738
9	14 19 16.01	2.0749	14 28 29.0	7.545	9	16 4 20.24	2.3067	19 4 54.7	3.636
10	14 21 20.64	2.0793	14 35 59.9	7.484	10	16 6 38.78	2.3115	19 8 29.8	3.533
11	14 23 25.54	2.0838	14 43 27.1	7.422	11	16 8 57.62	2.3163	19 11 58.7	3.429
12	14 25 30.70	2.0882	14 50 50.6	7.359	12	16 11 16.74	2.3211	19 15 21.3	3.325
13	14 27 36.13	2.0927	14 58 10.3	7.296	13	16 13 36.15	2.3258	19 18 37.7	3.220
14	14 29 41.83	2.0973	15 5 26.1	7.231	14	16 15 55.84	2.3306	19 21 47.7	3.113
15	14 31 47.81	2.1019	15 12 38.0	7.166	15	16 18 15.82	2.3353	19 24 51.3	3.006
16	14 33 54.06	2.1065	15 19 46.0	7.100	16	16 20 36.08	2.3400	19 27 48.4	2.898
17	14 36 0.59	2.1112	15 26 50.0	7.032	17	16 22 56.62	2.3447	19 30 39.0	2.789
18	14 38 7.40	2.1158	15 33 49.9	6.964	18	16 25 17.44	2.3493	19 33 23.1	2.679
19	14 40 14.48	2.1204	15 40 45.7	6.896	19	16 27 38.53	2.3539	19 36 0.5	2.569
20	14 42 21.85	2.1251	15 47 37.4	6.827	20	16 29 59.90	2.3584	19 38 31.3	2.457
21	14 44 29.50	2.1298	15 54 24.9	6.757	21	16 32 21.54	2.3629	19 40 55.4	2.346
22	14 46 37.43	2.1346	16 1 8.2	6.685	22	16 34 43.45	2.3674	19 43 12.8	2.233
23	14 48 45.65	2.1394	S.16 7 47.1	6.613	23	16 37 5.63	2.3718	S.19 45 23.4	2.119
	WEDNESDAY 10.					FRIDAY 12.			
0	14 50 54.16	2.1442	S.16 14 21.7	6.540	0	16 39 28.07	2.3762	S.19 47 27.1	2.005
1	14 53 2.96	2.1490	16 20 51.9	6.466	1	16 41 50.77	2.3806	19 49 24.0	1.890
2	14 55 12.04	2.1538	16 27 17.6	6.391	2	16 44 13.74	2.3850	19 51 13.9	1.774
3	14 57 21.41	2.1587	16 33 38.8	6.316	3	16 46 36.97	2.3893	19 52 56.8	1.657
4	14 59 31.08	2.1636	16 39 55.4	6.239	4	16 49 0.45	2.3936	19 54 32.7	1.540
5	15 1 41.03	2.1686	16 46 7.4	6.162	5	16 51 24.19	2.3977	19 56 1.5	1.422
6	15 3 51.28	2.1732	16 52 14.8	6.083	6	16 53 48.17	2.4018	19 57 23.3	1.303
7	15 6 1.82	2.1782	16 58 17.4	6.004	7	16 56 12.40	2.4059	19 58 37.9	1.183
8	15 8 12.66	2.1831	17 4 15.3	5.924	8	16 58 36.87	2.4099	19 59 45.3	1.063
9	15 10 23.79	2.1880	17 10 8.3	5.843	9	17 1 1.59	2.4139	20 0 45.5	0.942
10	15 12 35.22	2.1929	17 15 56.5	5.761	10	17 3 26.54	2.4178	20 1 38.4	0.821
11	15 14 46.95	2.1979	17 21 39.7	5.679	11	17 5 51.72	2.4217	20 2 24.0	0.699
12	15 16 58.97	2.2028	17 27 18.0	5.596	12	17 8 17.14	2.4255	20 3 2.3	0.576
13	15 19 11.29	2.2078	17 32 51.2	5.511	13	17 10 42.79	2.4293	20 3 33.2	0.453
14	15 21 23.91	2.2128	17 38 19.3	5.425	14	17 13 8.66	2.4330	20 3 56.7	0.330
15	15 23 36.83	2.2177	17 43 42.2	5.339	15	17 15 34.75	2.4367	20 4 12.8	0.206
16	15 25 50.04	2.2227	17 49 0.0	5.252	16	17 18 1.06	2.4403	20 4 21.4	0.081
17	15 28 3.55	2.2277	17 54 12.5	5.164	17	17 20 27.58	2.4438	20 4 22.5	0.045
18	15 30 17.36	2.2327	17 59 19.7	5.075	18	17 22 54.32	2.4473	20 4 16.0	0.171
19	15 32 31.47	2.2377	18 4 21.6	4.986	19	17 25 21.26	2.4507	20 4 2.0	0.297
20	15 34 45.88	2.2427	18 9 18.0	4.895	20	17 27 48.40	2.4540	20 3 40.3	0.424
21	15 37 0.59	2.2476	18 14 8.9	4.803	21	17 30 15.74	2.4573	20 3 11.0	0.552
22	15 39 15.59	2.2526	18 18 54.3	4.710	22	17 32 43.28	2.4605	20 2 34.0	0.680
23	15 41 30.90	2.2576	18 23 34.2	4.617	23	17 35 11.01	2.4637	20 1 49.3	0.809
24	15 43 46.50	2.2626	S.18 28 8.4	4.523	24	17 37 38.92	2.4668	S.20 0 56.9	0.938

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 13.					MONDAY 15.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 37 38.92	2.4668	S.20 0 56.9	0.936	0	19 38 10.94	2.5262	S.16 44 19.4	7.202
1	17 40 7.02	2.4698	19 59 56.7	1.067	1	19 40 42.49	2.5256	16 37 3.6	7.324
2	17 42 35.30	2.4727	19 58 48.8	1.196	2	19 43 14.01	2.5250	16 29 40.5	7.445
3	17 45 3.75	2.4756	19 57 33.1	1.327	3	19 45 45.49	2.5243	16 22 10.2	7.566
4	17 47 32.37	2.4784	19 56 9.5	1.458	4	19 48 16.93	2.5236	16 14 32.6	7.686
5	17 50 1.16	2.4812	19 54 38.1	1.589	5	19 50 48.32	2.5227	16 6 47.9	7.804
6	17 52 30.11	2.4838	19 52 58.8	1.720	6	19 53 19.66	2.5219	15 58 56.1	7.922
7	17 54 59.21	2.4864	19 51 11.7	1.851	7	19 55 50.95	2.5210	15 50 57.2	8.039
8	17 57 28.47	2.4889	19 49 16.7	1.982	8	19 58 22.18	2.5200	15 42 51.4	8.155
9	17 59 57.88	2.4913	19 47 13.8	2.115	9	20 0 53.35	2.5189	15 34 38.6	8.270
10	18 2 27.43	2.4936	19 45 2.9	2.247	10	20 3 24.45	2.5178	15 26 19.0	8.384
11	18 4 57.12	2.4959	19 42 44.1	2.379	11	20 5 55.49	2.5167	15 17 52.5	8.497
12	18 7 26.94	2.4981	19 40 17.4	2.512	12	20 8 26.46	2.5155	15 9 19.3	8.610
13	18 9 56.89	2.5002	19 37 42.7	2.645	13	20 10 57.35	2.5142	15 0 39.4	8.721
14	18 12 26.97	2.5022	19 35 0.0	2.778	14	20 13 28.17	2.5129	14 51 52.8	8.830
15	18 14 57.17	2.5042	19 32 9.3	2.911	15	20 15 58.91	2.5116	14 42 59.7	8.939
16	18 17 27.48	2.5061	19 29 10.7	3.044	16	20 18 29.56	2.5102	14 34 0.1	9.047
17	18 19 57.91	2.5080	19 26 4.0	3.177	17	20 21 0.13	2.5087	14 24 54.0	9.154
18	18 22 28.44	2.5097	19 22 49.4	3.310	18	20 23 30.61	2.5073	14 15 41.6	9.259
19	18 24 59.08	2.5114	19 19 26.8	3.443	19	20 26 1.01	2.5058	14 6 22.9	9.363
20	18 27 29.81	2.5130	19 15 56.2	3.576	20	20 28 31.31	2.5042	13 56 58.0	9.467
21	18 30 0.64	2.5145	19 12 17.6	3.709	21	20 31 1.51	2.5026	13 47 26.9	9.569
22	18 32 31.55	2.5159	19 8 31.1	3.842	22	20 33 31.62	2.5010	13 37 49.7	9.670
23	18 35 2.55	2.5172	S.19 4 36.5	3.976	23	20 36 1.63	2.4993	S.13 28 6.5	9.769
SUNDAY 14.					TUESDAY 16.				
0	18 37 33.62	2.5185	S.19 0 34.0	4.109	0	20 38 31.54	2.4976	S.13 18 17.4	9.868
1	18 40 4.77	2.5197	18 56 23.5	4.242	1	20 41 1.34	2.4958	13 8 22.4	9.965
2	18 42 35.99	2.5208	18 52 5.0	4.375	2	20 43 31.04	2.4940	12 58 21.6	10.060
3	18 45 7.27	2.5218	18 47 38.5	4.508	3	20 46 0.63	2.4922	12 48 15.2	10.154
4	18 47 38.61	2.5228	18 43 4.1	4.640	4	20 48 30.11	2.4904	12 38 3.1	10.247
5	18 50 10.00	2.5237	18 38 21.8	4.772	5	20 50 59.48	2.4885	12 27 45.5	10.339
6	18 52 41.45	2.5245	18 33 31.5	4.903	6	20 53 28.73	2.4866	12 17 22.4	10.429
7	18 55 12.94	2.5252	18 28 33.4	5.034	7	20 55 57.87	2.4847	12 6 54.0	10.517
8	18 57 44.48	2.5259	18 23 27.4	5.166	8	20 58 26.90	2.4828	11 56 20.3	10.605
9	19 0 16.05	2.5264	18 18 13.5	5.297	9	21 0 55.81	2.4808	11 45 41.4	10.691
10	19 2 47.65	2.5269	18 12 51.8	5.427	10	21 3 24.60	2.4788	11 34 57.4	10.776
11	19 5 19.28	2.5273	18 7 22.2	5.556	11	21 5 53.27	2.4768	11 24 8.3	10.859
12	19 7 50.93	2.5277	18 1 44.9	5.686	12	21 8 21.82	2.4748	11 13 14.3	10.941
13	19 10 22.60	2.5280	17 55 59.8	5.817	13	21 10 50.24	2.4727	11 2 15.4	11.021
14	19 12 54.29	2.5281	17 50 6.9	5.945	14	21 13 18.54	2.4707	10 51 11.8	11.100
15	19 15 25.98	2.5282	17 44 6.3	6.073	15	21 15 46.72	2.4686	10 40 3.5	11.177
16	19 17 57.68	2.5283	17 37 58.1	6.201	16	21 18 14.77	2.4665	10 28 50.6	11.252
17	19 20 29.38	2.5282	17 31 42.2	6.329	17	21 20 42.69	2.4643	10 17 33.2	11.326
18	19 23 1.07	2.5281	17 25 18.6	6.456	18	21 23 10.49	2.4622	10 6 11.5	11.398
19	19 25 32.76	2.5280	17 18 47.5	6.582	19	21 25 38.16	2.4602	9 54 45.5	11.469
20	19 28 4.43	2.5278	17 12 8.8	6.707	20	21 28 5.71	2.4580	9 43 15.2	11.539
21	19 30 36.09	2.5275	17 5 22.6	6.832	21	21 30 33.12	2.4558	9 31 40.8	11.607
22	19 33 7.73	2.5271	16 58 28.9	6.956	22	21 33 0.41	2.4537	9 20 2.4	11.673
23	19 35 39.35	2.5267	16 51 27.8	7.079	23	21 35 27.57	2.4516	9 8 20.1	11.738
24	19 38 10.94	2.5262	S.16 44 19.4	7.202	24	21 37 54.60	2.4494	S. 8 56 33.9	11.801

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 37 54.60	2.4494	S. 8 56 33.9	11.801
1	21 40 21.50	2.4472	8 44 44.0	11.862
2	21 42 48.27	2.4450	8 32 50.5	11.921
3	21 45 14.91	2.4428	8 20 53.5	11.979
4	21 47 41.41	2.4406	8 8 53.0	12.036
5	21 50 7.78	2.4385	7 56 49.2	12.091
6	21 52 34.03	2.4364	7 44 42.1	12.144
7	21 55 0.15	2.4342	7 32 31.9	12.196
8	21 57 26.14	2.4321	7 20 18.6	12.246
9	21 59 52.00	2.4300	7 8 2.4	12.294
10	22 2 17.74	2.4279	6 55 43.3	12.340
11	22 4 43.34	2.4257	6 43 21.5	12.385
12	22 7 8.82	2.4236	6 30 57.1	12.428
13	22 9 34.17	2.4214	6 18 30.2	12.469
14	22 11 59.39	2.4193	6 6 0.8	12.509
15	22 14 24.49	2.4172	5 53 29.1	12.547
16	22 16 49.46	2.4152	5 40 55.1	12.583
17	22 19 14.31	2.4131	5 28 19.0	12.618
18	22 21 39.03	2.4111	5 15 40.9	12.651
19	22 24 3.64	2.4091	5 3 0.8	12.683
20	22 26 28.12	2.4070	4 50 18.9	12.713
21	22 28 52.48	2.4050	4 37 35.3	12.741
22	22 31 16.72	2.4030	4 24 50.0	12.767
23	22 33 40.84	2.4010	S. 4 12 3.3	12.791

THURSDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 36 4.84	2.3991	S. 3 59 15.1	12.814
1	22 38 28.73	2.3972	3 46 25.6	12.835
2	22 40 52.50	2.3953	3 33 34.9	12.854
3	22 43 16.16	2.3934	3 20 43.1	12.872
4	22 45 39.71	2.3915	3 7 50.2	12.888
5	22 48 3.14	2.3896	2 54 56.4	12.903
6	22 50 26.46	2.3878	2 42 1.8	12.916
7	22 52 49.67	2.3860	2 29 6.5	12.927
8	22 55 12.78	2.3842	2 16 10.6	12.936
9	22 57 35.78	2.3825	2 3 14.2	12.943
10	22 59 58.68	2.3807	1 50 17.4	12.949
11	23 2 21.47	2.3790	1 37 20.3	12.954
12	23 4 44.16	2.3773	1 24 22.9	12.957
13	23 7 6.75	2.3757	1 11 25.4	12.958
14	23 9 29.24	2.3740	0 58 27.9	12.957
15	23 11 51.63	2.3724	0 45 30.5	12.955
16	23 14 13.93	2.3708	0 32 33.3	12.951
17	23 16 36.13	2.3692	0 19 36.4	12.946
18	23 18 58.24	2.3677	S. 0 6 39.8	12.939
19	23 21 20.25	2.3662	N. 0 6 16.3	12.930
20	23 23 42.18	2.3647	0 19 11.8	12.919
21	23 26 4.02	2.3632	0 32 6.6	12.907
22	23 28 25.77	2.3618	0 45 0.7	12.894
23	23 30 47.44	2.3604	0 57 54.0	12.880
24	23 33 9.02	2.3590	N. 1 10 46.3	12.863

FRIDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 33 9.02	2.3590	N. 1 10 46.3	12.863
1	23 35 30.52	2.3577	1 23 37.6	12.845
2	23 37 51.94	2.3563	1 36 27.7	12.826
3	23 40 13.28	2.3550	1 49 16.7	12.805
4	23 42 34.54	2.3538	2 2 4.3	12.782
5	23 44 55.73	2.3526	2 14 50.5	12.757
6	23 47 16.85	2.3514	2 27 35.2	12.731
7	23 49 37.90	2.3502	2 40 18.3	12.704
8	23 51 58.87	2.3490	2 52 59.7	12.676
9	23 54 19.77	2.3478	3 5 39.4	12.646
10	23 56 40.61	2.3467	3 18 17.2	12.614
11	23 59 1.38	2.3457	3 30 53.1	12.581
12	0 1 22.09	2.3446	3 43 26.9	12.547
13	0 3 42.74	2.3436	3 55 58.7	12.511
14	0 6 3.32	2.3426	4 8 28.2	12.473
15	0 8 23.85	2.3417	4 20 55.4	12.434
16	0 10 44.32	2.3407	4 33 20.3	12.394
17	0 13 4.73	2.3397	4 45 42.7	12.352
18	0 15 25.09	2.3389	4 58 2.6	12.309
19	0 17 45.40	2.3380	5 10 19.8	12.265
20	0 20 5.65	2.3371	5 22 34.4	12.220
21	0 22 25.85	2.3362	5 34 46.2	12.173
22	0 24 46.00	2.3355	5 46 55.2	12.125
23	0 27 6.11	2.3347	N. 5 59 1.3	12.076

SATURDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 29 26.17	2.3340	N. 6 11 4.3	12.025
1	0 31 46.19	2.3332	6 23 4.2	11.972
2	0 34 6.16	2.3326	6 35 1.0	11.919
3	0 36 26.10	2.3319	6 46 54.5	11.864
4	0 38 45.99	2.3312	6 58 44.7	11.809
5	0 41 5.84	2.3306	7 10 31.5	11.752
6	0 43 25.66	2.3299	7 22 14.9	11.693
7	0 45 45.44	2.3293	7 33 54.7	11.633
8	0 48 5.18	2.3288	7 45 30.9	11.573
9	0 50 24.89	2.3282	7 57 3.5	11.512
10	0 52 44.57	2.3277	8 8 32.3	11.449
11	0 55 4.22	2.3272	8 19 57.3	11.384
12	0 57 23.83	2.3267	8 31 18.4	11.318
13	0 59 43.41	2.3262	8 42 35.5	11.252
14	1 2 2.97	2.3257	8 53 48.6	11.185
15	1 4 22.50	2.3253	9 4 57.7	11.117
16	1 6 42.01	2.3248	9 16 2.7	11.048
17	1 9 1.49	2.3244	9 27 3.4	10.977
18	1 11 20.94	2.3240	9 37 59.9	10.905
19	1 13 40.37	2.3237	9 48 52.0	10.832
20	1 15 59.78	2.3233	9 59 39.7	10.758
21	1 18 19.17	2.3230	10 10 23.0	10.683
22	1 20 38.54	2.3226	10 21 1.7	10.606
23	1 22 57.88	2.3223	10 31 35.9	10.532
24	1 25 17.21	2.3220	N. 10 42 5.5	10.454

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 21.					TUESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 25 17.21	2.3220	N.10 42 5.5	10.454	0	3 16 25.44	2.3066	N.17 19 46.1	5.886
1	1 27 36.52	2.3217	10 52 30.4	10.375	1	3 18 43.82	2.3060	17 25 36.1	5.779
2	1 29 55.81	2.3214	11 2 50.5	10.296	2	3 21 2.16	2.3054	17 31 19.6	5.672
3	1 32 15.08	2.3210	11 13 5.8	10.215	3	3 23 20.46	2.3047	17 36 56.7	5.565
4	1 34 34.33	2.3207	11 23 16.3	10.134	4	3 25 38.73	2.3041	17 42 27.4	5.457
5	1 36 53.57	2.3205	11 33 21.9	10.052	5	3 27 56.96	2.3034	17 47 51.6	5.349
6	1 39 12.79	2.3202	11 43 22.6	9.969	6	3 30 15.14	2.3027	17 53 9.3	5.241
7	1 41 31.99	2.3199	11 53 18.2	9.885	7	3 32 33.28	2.3019	17 58 20.5	5.132
8	1 43 51.18	2.3196	12 3 8.8	9.800	8	3 34 51.37	2.3012	18 3 25.2	5.024
9	1 46 10.35	2.3194	12 12 54.3	9.715	9	3 37 9.42	2.3004	18 8 23.4	4.915
10	1 48 29.51	2.3192	12 22 34.6	9.628	10	3 39 27.42	2.2996	18 13 15.0	4.806
11	1 50 48.66	2.3190	12 32 9.7	9.541	11	3 41 45.37	2.2987	18 18 0.1	4.697
12	1 53 7.79	2.3187	12 41 39.5	9.453	12	3 44 3.27	2.2979	18 22 38.6	4.588
13	1 55 26.91	2.3185	12 51 4.0	9.364	13	3 46 21.12	2.2970	18 27 10.6	4.478
14	1 57 46.01	2.3182	13 0 23.2	9.275	14	3 48 38.91	2.2961	18 31 36.0	4.369
15	2 0 5.10	2.3180	13 9 37.0	9.185	15	3 50 56.64	2.2951	18 35 54.9	4.260
16	2 2 24.17	2.3178	13 18 45.4	9.094	16	3 53 14.32	2.2941	18 40 7.2	4.151
17	2 4 43.23	2.3176	13 27 48.3	9.002	17	3 55 31.94	2.2931	18 44 12.9	4.041
18	2 7 2.28	2.3174	13 36 45.7	8.910	18	3 57 49.49	2.2921	18 48 12.1	3.931
19	2 9 21.31	2.3171	13 45 37.5	8.817	19	4 0 6.98	2.2910	18 52 4.7	3.821
20	2 11 40.33	2.3169	13 54 23.7	8.723	20	4 2 24.41	2.2899	18 55 50.6	3.711
21	2 13 59.34	2.3167	14 3 4.2	8.628	21	4 4 41.77	2.2888	18 59 29.9	3.601
22	2 16 18.33	2.3165	14 11 39.1	8.533	22	4 6 59.07	2.2876	19 3 2.7	3.491
23	2 18 37.31	2.3162	N.14 20 8.3	8.438	23	4 9 16.29	2.2864	N.19 6 28.9	3.382
	MONDAY 22.					WEDNESDAY 24.			
0	2 20 56.27	2.3160	N.14 28 31.7	8.342	0	4 11 33.44	2.2852	N.19 9 48.5	3.272
1	2 23 15.22	2.3157	14 36 49.4	8.246	1	4 13 50.52	2.2840	19 13 1.5	3.162
2	2 25 34.15	2.3154	14 45 1.2	8.148	2	4 16 7.52	2.2827	19 16 7.9	3.052
3	2 27 53.06	2.3151	14 53 7.1	8.050	3	4 18 24.44	2.2814	19 19 7.7	2.942
4	2 30 11.96	2.3149	15 1 7.2	7.961	4	4 20 41.29	2.2801	19 22 0.9	2.832
5	2 32 30.84	2.3146	15 9 1.3	7.852	5	4 22 58.06	2.2787	19 24 47.5	2.722
6	2 34 49.71	2.3143	15 16 49.5	7.758	6	4 25 14.74	2.2773	19 27 27.6	2.612
7	2 37 8.55	2.3139	15 24 31.7	7.653	7	4 27 31.33	2.2758	19 30 1.1	2.503
8	2 39 27.38	2.3136	15 32 7.9	7.553	8	4 29 47.84	2.2744	19 32 28.0	2.394
9	2 41 46.19	2.3133	15 39 38.0	7.452	9	4 32 4.26	2.2729	19 34 48.4	2.285
10	2 44 4.98	2.3130	15 47 2.1	7.350	10	4 34 20.59	2.2713	19 37 2.2	2.175
11	2 46 23.75	2.3127	15 54 20.0	7.247	11	4 36 36.82	2.2697	19 39 9.4	2.066
12	2 48 42.50	2.3123	16 1 31.8	7.145	12	4 38 52.96	2.2682	19 41 10.1	1.957
13	2 51 1.22	2.3118	16 8 37.4	7.042	13	4 41 9.00	2.2666	19 43 4.3	1.848
14	2 53 19.92	2.3115	16 15 36.9	6.939	14	4 43 24.95	2.2649	19 44 51.9	1.739
15	2 55 38.60	2.3111	16 22 30.1	6.835	15	4 45 40.79	2.2632	19 46 33.0	1.631
16	2 57 57.25	2.3107	16 29 17.1	6.731	16	4 47 56.53	2.2615	19 48 7.6	1.523
17	3 0 15.88	2.3102	16 35 57.8	6.627	17	4 50 12.17	2.2598	19 49 35.7	1.415
18	3 2 34.48	2.3097	16 42 32.3	6.522	18	4 52 27.70	2.2580	19 50 57.4	1.307
19	3 4 53.05	2.3092	16 49 0.5	6.417	19	4 54 43.12	2.2562	19 52 12.6	1.199
20	3 7 11.59	2.3087	16 55 22.3	6.311	20	4 56 58.44	2.2543	19 53 21.3	1.091
21	3 9 30.10	2.3082	17 1 37.8	6.205	21	4 59 13.64	2.2524	19 54 23.6	0.984
22	3 11 48.58	2.3077	17 7 46.9	6.099	22	5 1 28.73	2.2505	19 55 19.4	0.877
23	3 14 7.03	2.3072	17 13 49.7	5.993	23	5 3 43.70	2.2485	19 56 8.8	0.770
24	3 16 25.44	2.3066	N.17 19 46.1	5.886	24	5 5 58.55	2.2466	N.19 56 51.8	0.663

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 5 58.55	2.2466	N.19 56 51.8	0.663
1	5 8 13.29	2.2446	19 57 28.4	0.557
2	5 10 27.90	2.2425	19 57 58.7	0.451
3	5 12 42.39	2.2404	19 58 22.6	0.345
4	5 14 56.75	2.2383	19 58 40.1	0.239
5	5 17 10.99	2.2362	19 58 51.3	0.134
6	5 19 25.10	2.2340	19 58 56.2	0.029
7	5 21 39.08	2.2318	19 58 54.8	0.075
8	5 23 52.92	2.2296	19 58 47.2	0.179
9	5 26 6.63	2.2274	19 58 33.3	0.283
10	5 28 20.21	2.2252	19 58 13.2	0.387
11	5 30 33.65	2.2229	19 57 46.8	0.491
12	5 32 46.96	2.2206	19 57 14.3	0.594
13	5 35 0.12	2.2182	19 56 35.6	0.696
14	5 37 13.14	2.2158	19 55 50.8	0.798
15	5 39 26.01	2.2133	19 54 59.8	0.900
16	5 41 38.74	2.2109	19 54 2.8	1.001
17	5 43 51.32	2.2084	19 52 59.7	1.102
18	5 46 3.75	2.2060	19 51 50.5	1.203
19	5 48 16.04	2.2035	19 50 35.3	1.304
20	5 50 28.17	2.2010	19 49 14.0	1.404
21	5 52 40.15	2.1984	19 47 46.8	1.503
22	5 54 51.98	2.1958	19 46 13.6	1.603
23	5 57 3.65	2.1932	N.19 44 34.5	1.702

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 59 15.16	2.1906	N.19 42 49.4	1.800
1	6 1 26.51	2.1879	19 40 58.5	1.897
2	6 3 37.71	2.1853	19 39 1.7	1.995
3	6 5 48.75	2.1826	19 36 59.1	2.092
4	6 7 59.62	2.1799	19 34 50.7	2.188
5	6 10 10.33	2.1771	19 32 36.5	2.284
6	6 12 20.87	2.1744	19 30 16.6	2.379
7	6 14 31.25	2.1716	19 27 51.0	2.474
8	6 16 41.46	2.1688	19 25 19.7	2.569
9	6 18 51.50	2.1660	19 22 42.7	2.663
10	6 21 1.38	2.1632	19 20 0.1	2.757
11	6 23 11.09	2.1603	19 17 11.8	2.851
12	6 25 20.62	2.1575	19 14 18.0	2.943
13	6 27 29.98	2.1546	19 11 18.7	3.035
14	6 29 39.17	2.1517	19 8 13.8	3.126
15	6 31 48.19	2.1488	19 5 3.5	3.217
16	6 33 57.03	2.1459	19 1 47.7	3.308
17	6 36 5.70	2.1430	18 58 26.5	3.398
18	6 38 14.19	2.1401	18 54 59.9	3.488
19	6 40 22.50	2.1371	18 51 27.9	3.577
20	6 42 30.64	2.1342	18 47 50.6	3.665
21	6 44 38.60	2.1312	18 44 8.0	3.753
22	6 46 46.38	2.1282	18 40 20.2	3.840
23	6 48 53.98	2.1252	18 36 27.1	3.927
24	6 51 1.40	2.1222	N.18 32 28.9	4.014

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 51 1.40	2.1222	N.18 32 28.9	4.014
1	6 53 8.64	2.1192	18 28 25.5	4.100
2	6 55 15.70	2.1162	18 24 16.9	4.185
3	6 57 22.58	2.1131	18 20 3.2	4.270
4	6 59 29.27	2.1101	18 15 44.5	4.354
5	7 1 35.79	2.1071	18 11 20.7	4.437
6	7 3 42.12	2.1041	18 6 52.0	4.520
7	7 5 48.27	2.1010	18 2 18.3	4.603
8	7 7 54.24	2.0980	17 57 39.6	4.685
9	7 10 0.03	2.0949	17 52 56.0	4.767
10	7 12 5.63	2.0919	17 48 7.6	4.847
11	7 14 11.05	2.0888	17 43 14.4	4.927
12	7 16 16.29	2.0858	17 38 16.4	5.006
13	7 18 21.34	2.0827	17 33 13.7	5.085
14	7 20 26.21	2.0797	17 28 6.2	5.164
15	7 22 30.90	2.0766	17 22 54.0	5.242
16	7 24 35.40	2.0736	17 17 37.2	5.319
17	7 26 39.72	2.0705	17 12 15.8	5.395
18	7 28 43.86	2.0675	17 6 49.8	5.471
19	7 30 47.82	2.0644	17 1 19.3	5.547
20	7 32 51.59	2.0614	16 55 44.2	5.622
21	7 34 55.18	2.0583	16 50 4.7	5.696
22	7 36 58.59	2.0553	16 44 20.7	5.769
23	7 39 1.82	2.0522	N.16 38 32.4	5.842

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 41 4.86	2.0492	N.16 32 39.7	5.914
1	7 43 7.72	2.0462	16 26 42.7	5.986
2	7 45 10.41	2.0432	16 20 41.4	6.057
3	7 47 12.92	2.0402	16 14 35.8	6.128
4	7 49 15.24	2.0372	16 8 26.0	6.198
5	7 51 17.38	2.0342	16 2 12.0	6.267
6	7 53 19.35	2.0313	15 55 53.9	6.335
7	7 55 21.14	2.0283	15 49 31.7	6.403
8	7 57 22.75	2.0254	15 43 5.5	6.470
9	7 59 24.19	2.0225	15 36 35.2	6.537
10	8 1 25.45	2.0196	15 30 1.0	6.604
11	8 3 26.54	2.0167	15 23 22.8	6.670
12	8 5 27.45	2.0137	15 16 40.6	6.735
13	8 7 28.19	2.0108	15 9 54.6	6.799
14	8 9 28.75	2.0079	15 3 4.7	6.863
15	8 11 29.14	2.0051	14 56 11.0	6.926
16	8 13 29.36	2.0022	14 49 13.6	6.988
17	8 15 29.42	1.9995	14 42 12.4	7.050
18	8 17 29.30	1.9966	14 35 7.6	7.111
19	8 19 29.01	1.9938	14 27 59.1	7.172
20	8 21 28.56	1.9910	14 20 46.9	7.232
21	8 23 27.94	1.9883	14 13 31.2	7.292
22	8 25 27.16	1.9855	14 6 11.9	7.350
23	8 27 26.21	1.9828	13 58 49.1	7.408
24	8 29 25.10	1.9801	N.13 51 22.9	7.465

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 29 25.10	1.9801	N.13 51 22.9	7.465
1	8 31 23.83	1.9775	13 43 53.2	7.522
2	8 33 22.40	1.9748	13 36 20.2	7.578
3	8 35 20.81	1.9722	13 28 43.8	7.634
4	8 37 19.06	1.9695	13 21 4.1	7.689
5	8 39 17.15	1.9669	13 13 21.1	7.743
6	8 41 15.09	1.9643	13 5 34.9	7.797
7	8 43 12.87	1.9617	12 57 45.4	7.851
8	8 45 10.50	1.9592	12 49 52.8	7.903
9	8 47 7.98	1.9567	12 41 57.0	7.955
10	8 49 5.31	1.9542	12 33 58.2	8.006
11	8 51 2.49	1.9517	12 25 56.3	8.056
12	8 52 59.52	1.9493	12 17 51.5	8.106
13	8 54 56.41	1.9469	12 9 43.7	8.155
14	8 56 53.15	1.9445	12 1 32.9	8.204
15	8 58 49.75	1.9422	11 53 19.2	8.252
16	9 0 46.21	1.9398	11 45 2.6	8.300
17	9 2 42.53	1.9376	11 36 43.2	8.347
18	9 4 38.71	1.9352	11 28 21.0	8.393
19	9 6 34.75	1.9329	11 19 56.1	8.438
20	9 8 30.66	1.9307	11 11 28.4	8.483
21	9 10 26.44	1.9285	11 2 58.1	8.527
22	9 12 22.08	1.9263	10 54 25.1	8.570
23	9 14 17.59	1.9242	N.10 45 49.6	8.613

TUESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 16 12.98	1.9220	N.10 37 11.5	8.656
1	9 18 8.24	1.9199	10 28 30.8	8.698
2	9 20 3.37	1.9178	10 19 47.7	8.739
3	9 21 58.38	1.9158	10 11 2.1	8.779
4	9 23 53.27	1.9138	10 2 14.2	8.819
5	9 25 48.04	1.9118	9 53 23.9	8.858
6	9 27 42.69	1.9098	9 44 31.2	8.897
7	9 29 37.22	1.9079	9 35 36.2	8.936
8	9 31 31.64	1.9060	9 26 38.9	8.973
9	9 33 25.95	1.9042	9 17 39.4	9.010
10	9 35 20.15	1.9024	9 8 37.7	9.046
11	9 37 14.24	1.9006	8 59 33.9	9.081
12	9 39 8.22	1.8989	8 50 28.0	9.116
13	9 41 2.10	1.8972	8 41 20.0	9.150
14	9 42 55.88	1.8955	8 32 10.0	9.184
15	9 44 49.55	1.8938	8 22 58.0	9.217
16	9 46 43.13	1.8922	8 13 44.0	9.249
17	9 48 36.61	1.8906	8 4 28.1	9.281
18	9 50 30.00	1.8890	7 55 10.3	9.312
19	9 52 23.29	1.8874	7 45 50.6	9.343
20	9 54 16.49	1.8859	7 36 29.1	9.373
21	9 56 9.60	1.8844	7 27 5.9	9.402
22	9 58 2.62	1.8830	7 17 40.9	9.431
23	9 59 55.56	1.8817	7 8 14.2	9.459
24	10 1 48.42	1.8803	N. 6 58 45.8	9.486

WEDNESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 1 48.42	1.8803	N. 6 58 45.8	9.486
1	10 3 41.20	1.8790	6 49 15.8	9.513
2	10 5 33.90	1.8777	6 39 44.2	9.539
3	10 7 26.52	1.8764	6 30 11.1	9.565
4	10 9 19.07	1.8752	6 20 36.4	9.590
5	10 11 11.54	1.8740	6 11 0.3	9.614
6	10 13 3.95	1.8728	6 1 22.7	9.638
7	10 14 56.29	1.8717	5 51 43.7	9.661
8	10 16 48.56	1.8707	5 42 3.4	9.683
9	10 18 40.77	1.8697	5 32 21.7	9.705
10	10 20 32.92	1.8687	5 22 38.8	9.726
11	10 22 25.01	1.8677	5 12 54.6	9.747
12	10 24 17.05	1.8668	5 3 9.1	9.767
13	10 26 9.03	1.8659	4 58 22.4	9.787
14	10 28 0.96	1.8650	4 43 34.6	9.806
15	10 29 52.83	1.8642	4 33 45.7	9.824
16	10 31 44.66	1.8634	4 23 55.7	9.841
17	10 33 36.44	1.8627	4 14 4.7	9.858
18	10 35 28.18	1.8620	4 4 12.7	9.875
19	10 37 19.88	1.8613	3 54 19.7	9.891
20	10 39 11.54	1.8607	3 44 25.8	9.906
21	10 41 3.16	1.8601	3 34 31.0	9.920
22	10 42 54.75	1.8596	3 24 35.4	9.934
23	10 44 46.31	1.8591	N. 3 14 38.9	9.947

THURSDAY, SEPTEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 46 37.84	1.8586	N. 3 4 41.7	9.960

PHASES OF THE MOON.

	d	h	m
● New Moon, . .	2	2	33.4
☽ First Quarter, . .	10	5	57.1
○ Full Moon, . . .	17	1	36.5
☾ Last Quarter, . .	23	18	4.3
● New Moon, . .	31	18	7.8

	d	h
☾ Apogee, ...	4	8.1
☾ Perigee, ...	17	10.1
☾ Apogee, ...	31	11.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
4	Sun	W.	21° 15′ 2″	3567	22° 34′ 12″	3556	23° 53′ 35″	3545	25° 13′ 10″	3536
	Saturn	E.	41 1 6	3143	39 33 48	3147	38 6 35	3150	36 39 26	3154
	Spica	E.	48 54 25	3077	47 25 47	3078	45 57 10	3078	44 28 34	3079
	Jupiter	E.	75 27 47	3098	73 59 35	3101	72 31 25	3101	71 3 17	3103
	Antares	E.	94 26 45	3105	92 58 41	3106	91 30 39	3107	90 2 38	3108
5	Sun	W.	31 53 2	3506	33 13 19	3502	34 33 41	3497	35 54 9	3492
	Saturn	E.	29 24 56	3178	27 58 20	3183	26 31 51	3190	25 5 30	3198
	Spica	E.	37 5 42	3079	35 37 7	3078	34 8 31	3078	32 39 54	3077
	Jupiter	E.	63 42 46	3103	62 14 40	3102	60 46 33	3101	59 18 25	3100
	Antares	E.	82 42 42	3109	81 14 43	3108	79 46 43	3108	78 18 43	3106
6	Sun	W.	42 37 45	3469	43 58 44	3463	45 19 49	3459	46 40 59	3453
	Spica	E.	25 16 19	3065	23 47 27	3062	22 18 31	3059	20 49 31	3055
	Jupiter	E.	51 57 15	3090	50 28 53	3087	49 0 27	3082	47 31 56	3079
	Antares	E.	70 58 16	3098	69 30 4	3095	68 1 48	3092	66 33 29	3090
7	Sun	W.	53 28 32	3421	54 50 25	3414	56 12 26	3407	57 34 35	3399
	Jupiter	E.	40 8 9	3056	38 39 5	3050	37 9 54	3044	35 40 36	3038
	Antares	E.	59 10 55	3070	57 42 9	3066	56 13 18	3061	54 44 21	3056
	a Aquilæ	E.	109 55 47	3493	108 35 15	3479	107 14 27	3465	105 53 24	3452
8	Sun	W.	64 27 45	3353	65 50 55	3343	67 14 17	3332	68 37 51	3321
	Jupiter	E.	28 11 53	2998	26 41 38	2989	25 11 12	2981	23 40 35	2970
	Antares	E.	47 17 58	3028	45 48 20	3022	44 18 35	3016	42 48 42	3009
	a Aquilæ	E.	99 4 29	3389	97 42 0	3377	96 19 17	3365	94 56 21	3353
9	Sun	W.	75 39 2	3260	77 4 0	3247	78 29 13	3234	79 54 42	3220
	Saturn	W.	19 8 29	3057	20 37 31	3027	22 7 10	3000	23 37 23	2975
	Spica	W.	10 49 33	2889	12 22 5	2878	13 54 52	2866	15 27 55	2852
	Antares	E	35 17 25	2981	33 46 49	2977	32 16 7	2973	30 45 21	2972
	a Aquilæ	E.	87 58 19	3297	86 34 4	3286	85 9 36	3276	83 44 56	3265
10	Sun	W.	87 6 31	3143	88 33 48	3127	90 1 25	3110	91 29 22	3093
	Saturn	W.	31 15 48	2867	32 48 49	2848	34 22 15	2828	35 56 7	2809
	Spica	W.	23 17 31	2782	24 52 22	2767	26 27 33	2752	28 3 4	2736
	a Aquilæ	E.	76 38 37	3216	75 12 47	3208	73 46 47	3200	72 20 38	3193
	Fomalhaut	E.	105 42 59	3278	104 18 22	3257	102 53 20	3236	101 27 53	3214
11	Sun	W.	98 54 27	3004	100 24 35	2985	101 55 6	2967	103 26 0	2948
	Saturn	W.	43 51 38	2713	45 28 0	2694	47 4 48	2675	48 42 1	2656
	Spica	W.	36 6 1	2653	37 43 44	2636	39 21 50	2618	41 0 20	2601
	Jupiter	W.	9 3 44	2683	10 40 47	2664	12 18 15	2646	13 56 7	2629
	a Aquilæ	E.	65 7 50	3164	63 40 58	3162	62 14 3	3161	60 47 7	3160
	Fomalhaut	E.	94 14 27	3114	92 46 35	3097	91 18 21	3078	89 49 44	3060
	a Pegasi	E.	111 49 8	2837	110 15 28	2816	108 41 21	2795	107 6 46	2774
12	Sun	W.	111 6 36	2851	112 39 58	2831	114 13 45	2811	115 47 58	2792
	Saturn	W.	56 54 41	2559	58 34 33	2540	60 14 51	2520	61 55 37	2500
	Spica	W.	49 19 0	2510	51 0 0	2490	52 41 27	2472	54 23 20	2453
	Jupiter	W.	22 11 39	2536	23 52 2	2517	25 32 51	2499	27 14 6	2480
	a Aquilæ	E.	53 33 6	3189	52 6 44	3202	50 40 37	3219	49 14 50	3240
	Fomalhaut	E.	82 21 25	2979	80 50 46	2965	79 19 50	2952	77 48 37	2939
	a Pegasi	E.	99 7 4	2672	97 29 46	2652	95 52 2	2632	94 13 51	2612

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
4	Sun	W.	26° 32′ 54″	3529	27° 52′ 46″	3523	29° 12′ 45″	3516	30° 32′ 51″	3512
	Saturn	E.	35 12 22	3158	33 45 22	3163	32 18 28	3167	30 51 39	3172
	Spica	E.	42 59 59	3080	41 31 25	3080	40 2 51	3080	38 34 17	3079
	Jupiter	E	69 35 10	3102	68 7 3	3103	66 38 57	3103	65 10 51	3104
	Antares	E.	88 34 38	3109	87 6 39	3109	85 38 40	3109	84 10 41	3109
5	Sun	W.	37 14 42	3488	38 35 20	3483	39 56 3	3479	41 16 51	3473
	Saturn	E.	23 39 19	3209	22 13 21	3221	20 47 37	3236	19 22 10	3255
	Spica	E.	31 11 16	3075	29 42 36	3073	28 13 53	3070	26 45 7	3069
	Jupiter	E.	57 50 15	3099	56 22 4	3096	54 53 50	3095	53 25 34	3092
	Antares	E.	76 50 41	3106	75 22 38	3104	73 54 33	3102	72 26 26	3100
6	Sun	W.	48 2 16	3447	49 23 39	3441	50 45 9	3434	52 6 47	3428
	Spica	E.	19 20 26	3051	17 51 16	3047	16 22 1	3042	14 52 40	3036
	Jupiter	E.	46 3 21	3076	44 34 42	3071	43 5 57	3066	41 37 6	3061
	Antares	E.	65 5 7	3087	63 36 41	3082	62 8 10	3079	60 39 35	3075
7	Sun	W.	58 56 53	3391	60 19 20	3381	61 41 58	3372	63 4 46	3363
	Jupiter	E.	34 11 10	3030	32 41 35	3023	31 11 51	3015	29 41 57	3007
	Antares	E.	53 15 18	3051	51 46 8	3046	50 16 52	3040	48 47 29	3034
	a Aquilæ	E.	104 32 6	3438	103 10 33	3426	101 48 46	3413	100 26 44	3401
8	Sun	W.	70 1 38	3310	71 25 38	3298	72 49 52	3286	74 14 20	3274
	Jupiter	E.	22 9 45	2961	20 38 43	2950	19 7 28	2939	17 35 59	2929
	Antares	E.	41 18 41	3004	39 48 33	2998	38 18 18	2992	36 47 55	2986
	a Aquilæ	E.	93 33 11	3342	92 9 48	3330	90 46 11	3319	89 22 22	3307
9	Sun	W.	81 20 28	3204	82 46 32	3190	84 12 53	3174	85 39 33	3159
	Saturn	W.	25 8 7	2951	26 39 21	2929	28 11 3	2908	29 43 12	2887
	Spica	W.	17 1 15	2839	18 34 52	2826	20 8 46	2811	21 42 59	2797
	Antares	E	29 14 33	2970	27 43 43	2970	26 12 53	2974	24 42 8	2981
	a Aquilæ	E.	82 20 4	3255	80 55 0	3245	79 29 44	3235	78 4 16	3225
10	Sun	W.	92 57 40	3076	94 26 19	3059	95 55 19	3040	97 24 42	3022
	Saturn	W.	37 30 23	2790	39 5 4	2771	40 40 10	2751	42 15 42	2733
	Spica	W.	29 38 56	2720	31 15 9	2704	32 51 44	2687	34 28 41	2670
	a Aquilæ	E.	70 54 20	3185	69 27 53	3178	68 1 18	3173	66 34 37	3168
	Fomalhaut	E.	100 2 0	3193	98 35 43	3173	97 9 1	3153	95 41 56	3133
11	Sun	W.	104 57 18	2929	106 29 0	2909	108 1 7	2890	109 33 39	2870
	Saturn	W.	50 19 40	2636	51 57 46	2617	53 36 18	2598	55 15 16	2578
	Spica	W.	42 39 14	2583	44 18 33	2564	45 58 17	2546	47 38 26	2528
	Jupiter	W.	15 34 23	2610	17 13 4	2592	18 52 10	2573	20 31 42	2555
	a Aquilæ	E.	59 20 10	3162	57 53 15	3166	56 26 25	3171	54 59 41	3178
	Fomalhaut	E.	88 20 46	3043	86 51 26	3026	85 21 45	3010	83 51 45	2994
	a Pegasi	E.	105 31 44	2753	103 56 15	2733	102 20 19	2712	100 43 55	2692
12	Sun	W.	117 22 37	2772	118 57 41	2753	120 33 11	2732	122 9 8	2713
	Saturn	W.	63 36 50	2481	65 18 30	2461	67 0 38	2442	68 43 13	2422
	Spica	W.	56 5 40	2433	57 48 27	2415	59 31 40	2396	61 15 20	2378
	Jupiter	W.	28 55 48	2461	30 37 56	2442	32 20 31	2423	34 3 33	2404
	a Aquilæ	E.	47 49 28	3265	46 24 36	3295	45 0 19	3332	43 36 44	3375
	Fomalhaut	E.	76 17 8	2927	74 45 24	2916	73 13 26	2907	71 41 16	2898
	a Pegasi	E.	92 35 13	2593	90 56 9	2574	89 16 39	2556	87 36 44	2538

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
13	Saturn	W.	70° 26′ 16″	2403	72° 9′ 46″	2385	73° 53′ 42″	2366	75° 38′ 6″	2347
	Spica	W.	62 59 27	2359	64 44 1	2340	66 29 2	2322	68 14 29	2304
	Jupiter	W.	35 47 2	2385	37 30 58	2367	39 15 20	2348	41 0 9	2331
	Antares	W.	18 36 20	2639	20 14 22	2577	21 53 48	2525	23 34 26	2480
	α Aquilæ	E.	42 13 59	3426	40 52 12	3487	39 31 33	3557	38 12 12	3641
	Fomalhaut	E.	70 8 55	2891	68 36 25	2886	67 3 48	2882	65 31 6	2880
	α Pegasi	E.	85 56 23	2520	84 15 37	2502	82 34 27	2486	80 52 53	2468
14	Saturn	W.	84 26 46	2258	86 13 48	2241	88 1 15	2225	89 49 6	2208
	Spica	W.	77 8 23	2216	78 56 27	2199	80 44 56	2182	82 33 50	2167
	Jupiter	W.	49 50 47	2242	51 38 12	2225	53 26 2	2209	55 14 16	2192
	Antares	W.	32 11 23	2315	33 57 0	2289	35 43 15	2266	37 30 5	2243
	Fomalhaut	E.	57 47 41	2900	56 15 22	2913	54 43 20	2930	53 11 39	2950
	α Pegasi	E.	72 19 25	2394	70 35 41	2381	68 51 39	2370	67 7 21	2359
15	Spica	W.	91 44 8	2094	93 35 17	2081	95 26 46	2068	97 18 35	2056
	Jupiter	W.	64 21 16	2120	66 11 45	2107	68 2 34	2094	69 53 42	2082
	Antares	W.	46 32 4	2147	48 21 51	2132	50 12 2	2116	52 2 36	2102
	Fomalhaut	E.	45 41 44	3134	44 14 16	3194	42 48 0	3264	41 23 6	3345
	α Pegasi	E.	58 22 25	2322	56 36 57	2319	54 51 25	2317	53 5 51	2318
	α Arietis	E.	101 11 4	2153	99 21 25	2139	97 31 25	2126	95 41 5	2114
16	Jupiter	W.	79 13 40	2033	81 6 23	2025	82 59 19	2017	84 52 26	2011
	Antares	W.	61 20 31	2043	63 12 58	2034	65 5 39	2026	66 58 33	2019
	α Pegasi	E.	44 19 25	2360	42 34 53	2378	40 50 47	2402	39 7 14	2430
	α Arietis	E.	86 25 8	2064	84 33 13	2056	82 41 6	2050	80 48 49	2044
	Mars	E.	106 14 21	2175	104 25 16	2167	102 35 58	2158	100 46 27	2151
	Aldebaran	E.	119 38 6	2016	117 44 57	2007	115 51 34	2000	113 57 59	1993
17	Jupiter	W.	94 20 7	1991	96 13 56	1989	98 7 47	1988	100 1 40	1988
	Antares	W.	76 25 27	1995	78 19 9	1993	80 12 55	1991	82 6 43	1991
	α Aquilæ	W.	33 15 53	2693	34 32 47	2529	35 52 39	2387	37 15 10	2265
	α Arietis	E.	71 25 38	2029	69 32 49	2029	67 40 0	2030	65 47 12	2032
	Mars	E.	91 36 42	2130	89 46 28	2128	87 56 11	2126	86 5 52	2126
	Aldebaran	E.	104 27 51	1972	102 33 32	1970	100 39 10	1969	98 44 47	1968
18	Antares	W.	91 35 24	2002	93 28 55	2007	95 22 19	2012	97 15 35	2019
	α Aquilæ	W.	44 38 1	2864	46 11 6	2813	47 45 17	2769	49 20 26	2731
	α Arietis	E.	56 24 32	2058	54 32 28	2067	52 40 38	2077	50 49 4	2088
	Mars	E.	76 54 34	2137	75 4 31	2141	73 14 35	2147	71 24 48	2153
	Aldebaran	E.	89 13 10	1979	87 19 3	1984	85 25 3	1989	83 31 12	1996
19	α Aquilæ	W.	57 26 29	2618	59 5 6	2601	60 44 0	2592	62 23 6	2585
	Fomalhaut	W.	33 8 0	4116	34 17 46	3928	35 30 37	3769	36 46 11	3634
	α Arietis	E.	41 36 18	2169	39 47 3	2190	37 58 20	2214	36 10 14	2241
	Mars	E.	62 18 32	2195	60 29 57	2205	58 41 37	2216	56 53 34	2229
	Aldebaran	E.	74 4 45	2037	72 12 9	2048	70 19 49	2059	68 27 46	2071
	Pollux	E.	116 17 40	2136	114 27 36	2143	112 37 42	2151	110 48 0	2159
20	α Aquilæ	W.	70 39 56	2583	72 19 14	2588	73 58 25	2595	75 37 26	2604
	Fomalhaut	W.	43 34 32	3201	45 0 40	3148	46 27 51	3104	47 55 56	3065
	α Pegasi	W.	23 55 56	3274	25 20 38	3142	26 47 57	3037	28 17 24	2954
	Mars	E.	47 57 58	2296	46 11 52	2310	44 26 7	2326	42 40 45	2342
	Aldebaran	E.	59 12 21	2137	57 22 19	2152	55 32 39	2167	53 43 22	2183
	Pollux	E.	101 43 16	2216	99 55 13	2230	98 7 30	2245	96 20 9	2259

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
13	Saturn	W.	77° 22′ 57″	2328	79° 8′ 15″	2311	80° 53′ 59″	2292	82° 40′ 10″	2275
	Spica	W.	70 0 23	2284	71 46 44	2268	73 33 31	2250	75 20 44	2233
	Jupiter	W.	42 45 24	2312	44 31 6	2294	46 17 14	2277	48 3 48	2260
	Antares	W.	25 16 7	2441	26 58 44	2405	28 42 11	2372	30 26 26	2343
	a Aquilæ	E.	36 54 22	3740	35 38 17	3856	34 24 13	3995	33 12 28	4157
	Fomalhaut	E.	63 58 21	2879	62 25 35	2880	60 52 51	2884	59 20 12	2891
	a Pegasi	E.	79 10 55	2452	77 28 34	2437	75 45 52	2422	74 2 49	2408
14	Saturn	W.	91 37 21	2198	93 25 59	2178	95 15 0	2163	97 4 24	2148
	Spica	W.	84 23 8	2161	86 12 49	2136	88 2 54	2122	89 53 20	2107
	Jupiter	W.	57 2 55	2177	58 51 57	2162	60 41 22	2148	62 31 8	2134
	Antares	W.	39 17 29	2222	41 5 24	2202	42 53 49	2182	44 42 43	2165
	Fomalhaut	E.	51 40 24	2975	50 9 40	3005	48 39 34	3042	47 10 13	3084
	a Pegasi	E.	65 22 47	2349	63 37 59	2340	61 52 58	2333	60 7 46	2326
15	Spica	W.	99 10 42	2044	101 3 7	2033	102 55 49	2024	104 48 46	2014
	Jupiter	W.	71 45 9	2071	73 36 53	2060	75 28 54	2050	77 21 10	2041
	Antares	W.	53 53 32	2088	55 44 49	2076	57 36 25	2064	59 28 20	2053
	Fomalhaut	E.	39 59 46	3438	38 38 13	3550	37 18 44	3679	36 1 35	3830
	a Pegasi	E.	51 20 18	2322	49 34 50	2326	47 49 29	2334	46 4 19	2345
	a Arietis	E.	93 50 27	2102	91 59 31	2091	90 8 18	2081	88 16 50	2072
16	Jupiter	W.	86 45 43	2005	88 39 9	2001	90 32 42	1996	92 26 22	1993
	Antares	W.	68 51 38	2012	70 44 53	2007	72 38 17	2001	74 31 49	1996
	a Pegasi	E.	37 24 22	2465	35 42 20	2507	34 1 17	2559	32 21 25	2622
	a Arietis	E.	78 56 23	2039	77 3 49	2035	75 11 9	2032	73 18 25	2030
	Mars	E.	98 56 45	2145	97 6 55	2140	95 16 57	2136	93 26 52	2132
	Aldebaran	E.	112 4 13	1987	110 10 18	1982	108 16 15	1978	106 22 6	1974
17	Jupiter	W.	101 55 33	1989	103 49 25	1991	105 43 14	1993	107 36 59	1996
	Antares	W.	84 0 31	1991	85 54 19	1993	87 48 5	1995	89 41 47	1998
	a Aquilæ	W.	38 40 2	3160	40 6 59	3069	41 35 46	2990	43 6 11	2923
	a Arietis	E.	63 54 27	2035	62 1 47	2039	60 9 13	2044	58 16 48	2050
	Mars	E.	84 15 32	2126	82 25 13	2128	80 34 56	2130	78 44 43	2133
	Aldebaran	E.	96 50 23	1969	94 56 0	1970	93 1 39	1973	91 7 22	1976
18	Antares	W.	99 8 40	2026	101 1 34	2034	102 54 15	2042	104 46 43	2052
	a Aquilæ	W.	50 56 25	2699	52 33 6	2672	54 10 24	2649	55 48 13	2629
	a Arietis	E.	48 57 47	2101	47 6 50	2116	45 16 15	2131	43 26 3	2149
	Mars	E.	69 35 10	2160	67 45 42	2168	65 56 26	2176	64 7 22	2185
	Aldebaran	E.	81 37 31	2003	79 44 1	2010	77 50 42	2018	75 57 36	2028
19	a Aquilæ	W.	64 2 22	2580	65 41 44	2578	67 21 9	2578	69 0 34	2580
	Fomalhaut	W.	38 4 9	3519	39 24 12	3420	40 46 6	3335	42 9 37	3263
	a Arietis	E.	34 22 47	2271	32 36 5	2304	30 50 12	2342	29 5 14	2386
	Mars	E.	55 5 49	2241	53 18 22	2253	51 31 14	2267	49 44 26	2281
	Aldebaran	E.	66 36 2	2083	64 44 36	2096	62 53 30	2109	61 2 45	2123
	Pollux	E.	108 58 31	2169	107 9 17	2180	105 20 19	2191	103 31 38	2204
20	a Aquilæ	W.	77 16 16	2612	78 54 54	2624	80 33 17	2635	82 11 24	2648
	Fomalhaut	W.	49 24 48	3034	50 54 19	3007	52 24 23	2985	53 54 54	2967
	a Pegasi	W.	29 48 35	2887	31 21 11	2834	32 54 55	2791	34 29 35	2757
	Mars	E.	40 55 46	2357	39 11 10	2373	37 26 57	2391	35 43 9	2408
	Aldebaran	E.	51 54 29	2200	50 6 1	2216	48 17 57	2233	46 30 18	2250
	Pollux	E.	94 33 9	2274	92 46 32	2290	91 0 18	2306	89 14 27	2323

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
21	*a* Aquilæ	W.	83° 49′ 14″	2663	85° 26′ 44″	2678	87° 3′ 54″	2693	88° 40′ 43″	2710
	Fomalhaut	W.	55 25 48	2954	56 56 59	2942	58 28 24	2935	59 59 59	2929
	a Pegasi	W.	36 4 59	2732	37 40 57	2711	39 17 22	2696	40 54 7	2685
	Mars	E.	33 59 45	2425	32 16 46	2442	30 34 11	2460	28 52 2	2478
	Aldebaran	E.	44 43 5	2268	42 56 18	2286	41 9 58	2304	39 24 5	2322
	Pollux	E.	87 29 1	2339	85 43 59	2357	83 59 23	2375	82 15 12	2393
	Sun	E.	124 54 25	2580	123 15 3	2598	121 36 5	2616	119 57 31	2634
22	*a* Aquilæ	W.	96 38 55	2805	98 13 16	2827	99 47 9	2849	101 20 33	2872
	Fomalhaut	W.	67 38 41	2933	69 10 18	2939	70 41 48	2946	72 13 9	2953
	a Pegasi	W.	49 0 6	2675	50 37 19	2679	52 14 27	2684	53 51 28	2692
	Aldebaran	E.	30 41 35	2422	28 58 31	2443	27 15 57	2465	25 33 54	2487
	Pollux	E.	73 40 54	2488	71 59 24	2507	70 18 21	2527	68 37 46	2548
	Sun	E.	111 50 50	2725	110 14 44	2744	108 39 3	2763	107 3 47	2782
23	Fomalhaut	W.	79 47 4	3006	81 17 9	3019	82 46 58	3033	84 16 30	3047
	a Pegasi	W.	61 53 50	2738	63 29 39	2750	65 5 13	2761	66 40 32	2773
	a Arietis	W.	18 50 34	3116	20 18 24	3049	21 47 36	2998	23 17 51	2960
	Pollux	E.	60 21 49	2651	58 44 3	2672	57 6 46	2693	55 29 57	2715
	Sun	E.	99 13 32	2876	97 40 41	2893	96 8 13	2911	94 36 8	2929
24	Fomalhaut	W.	91 39 40	3124	93 7 20	3141	94 34 40	3158	96 1 39	3177
	a Pegasi	W.	74 33 6	2836	76 6 47	2849	77 40 11	2862	79 13 18	2875
	a Arietis	W.	30 57 29	2883	32 30 10	2879	34 2 56	2879	35 35 42	2880
	Pollux	E.	47 33 17	2831	45 59 29	2855	44 26 13	2881	42 53 30	2907
	Sun	E.	87 1 20	3016	85 31 27	3033	84 1 55	3049	82 32 43	3065
25	*a* Pegasi	W.	86 54 44	2940	88 26 12	2954	89 57 23	2966	91 28 18	2978
	a Arietis	W.	43 18 41	2901	44 50 58	2908	46 23 7	2915	47 55 7	2923
	Mars	W.	17 36 18	2967	19 7 12	2981	20 37 48	2994	22 8 8	3007
	Aldebaran	W.	9 43 8	3006	11 13 13	2964	12 44 11	2939	14 15 40	2927
	Pollux	E.	35 18 47	3061	33 49 50	3098	32 21 38	3138	30 54 15	3183
	Sun	E.	75 11 32	3142	73 44 13	3156	72 17 11	3170	70 50 26	3183
26	*a* Pegasi	W.	98 59 1	3040	100 28 24	3053	101 57 31	3065	103 26 23	3077
	a Arietis	W.	55 32 43	2960	57 3 46	2967	58 34 40	2975	60 5 24	2982
	Mars	W.	29 35 58	3065	31 4 50	3077	32 33 28	3087	34 1 53	3097
	Aldebaran	W.	21 55 9	2924	23 26 58	2928	24 58 41	2934	26 30 17	2939
	Sun	E.	63 40 37	3247	62 15 24	3259	60 50 25	3271	59 25 40	3282
27	*a* Arietis	W.	67 36 48	3018	69 6 39	3025	70 36 21	3031	72 5 55	3037
	Mars	W.	41 21 4	3143	42 48 22	3150	44 15 31	3158	45 42 30	3165
	Aldebaran	W.	34 6 19	2972	35 37 7	2978	37 7 47	2985	38 38 19	2991
	Sun	E.	52 24 59	3333	51 1 26	3343	49 38 4	3352	48 14 53	3362
28	*a* Arietis	W.	79 31 56	3065	81 0 48	3071	82 29 33	3076	83 58 12	3081
	Mars	W.	52 55 21	3198	54 21 32	3204	55 47 37	3209	57 13 36	3214
	Aldebaran	W.	46 9 9	3018	47 38 59	3024	49 8 42	3028	50 38 20	3033
	Sun	E.	41 21 28	3403	39 59 15	3411	38 37 11	3419	37 15 16	3427
29	*a* Arietis	W.	91 20 5	3101	92 48 13	3105	94 16 16	3109	95 44 15	3113
	Mars	W.	64 22 3	3236	65 47 30	3239	67 12 53	3242	68 38 12	3245
	Aldebaran	W.	58 5 9	3052	59 34 17	3056	61 3 21	3059	62 32 21	3062
	Sun	E.	30 27 54	3467	29 6 53	3475	27 46 1	3485	26 25 20	3496

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	α Aquilæ	W.	90° 17′ 10″	2727	91° 53′ 14″	2746	93° 28′ 53″	2765	95° 4′ 7″	2785
	Fomalhaut	W.	61 31 41	2926	63 3 27	2925	64 35 14	2927	66 6 59	2929
	α Pegasi	W.	42 31 7	2678	44 8 17	2674	45 45 32	2672	47 22 49	2672
	Mars	E.	27 10 18	2496	25 28 59	2514	23 48 5	2533	22 7 37	2551
	Aldebaran	E.	37 38 39	2342	35 53 41	2361	31 9 10	2381	32 25 8	2401
	Pollux	E.	80 31 27	2412	78 48 9	2430	77 5 17	2449	75 22 52	2468
	Sun	E.	118 19 22	2652	116 41 37	2670	115 4 17	2688	113 27 21	2707
22	α Aquilæ	W.	102 53 28	2896	104 25 53	2919	105 57 48	2944	107 29 11	2962
	Fomalhaut	W.	73 44 21	2962	75 15 21	2972	76 46 9	2982	78 16 44	2994
	α Pegasi	W.	55 28 19	2699	57 5 0	2707	58 41 30	2717	60 17 47	2728
	Aldebaran	E.	23 52 22	2510	22 11 23	2535	20 30 59	2562	18 51 12	2591
	Pollux	E.	66 57 38	2567	65 17 58	2588	63 38 47	2609	62 0 4	2629
	Sun	E.	105 28 55	2801	103 54 28	2819	102 20 25	2838	100 46 47	2856
23	Fomalhaut	W.	85 45 45	3061	87 14 42	3076	88 43 21	3092	90 11 40	3108
	α Pegasi	W.	68 15 35	2785	69 50 22	2798	71 24 53	2810	72 59 8	2823
	α Arietis	W.	24 48 54	2932	26 20 32	2912	27 52 35	2898	29 24 56	2889
	Pollux	E.	53 53 37	2738	52 17 47	2760	50 42 27	2783	49 7 37	2806
	Sun	E.	93 4 26	2947	91 33 7	2965	90 2 10	2981	88 31 34	2999
24	Fomalhaut	W.	97 28 16	3194	98 54 32	3213	100 20 26	3231	101 45 59	3250
	α Pegasi	W.	80 46 9	2888	82 18 43	2901	83 51 0	2915	85 23 0	2927
	α Arietis	W.	37 8 27	2883	38 41 8	2886	40 13 45	2891	41 46 16	2895
	Pollux	E.	41 21 20	2935	39 49 45	2964	38 18 47	2994	36 48 27	3026
	Sun	E.	81 3 51	3081	79 35 18	3096	78 7 4	3112	76 39 9	3127
25	α Pegasi	W.	92 58 58	2991	94 29 22	3004	95 59 30	3016	97 29 23	3028
	α Arietis	W.	49 26 57	2930	50 58 38	2938	52 30 9	2945	54 1 31	2953
	Mars	W.	23 38 12	3019	25 8 1	3032	26 37 34	3043	28 6 53	3055
	Aldebaran	W.	15 47 25	2920	17 19 18	2916	18 51 16	2916	20 23 14	2919
	Pollux	E.	29 27 45	3231	28 2 13	3287	26 37 46	3350	25 14 32	3422
	Sun	E.	69 23 57	3197	67 57 44	3210	66 31 47	3223	65 6 5	3235
26	α Pegasi	W.	104 55 1	3089	106 23 24	3101	107 51 32	3113	109 19 26	3124
	α Arietis	W.	61 35 59	2989	63 6 25	2997	64 36 42	3005	66 6 49	3011
	Mars	W.	35 30 6	3107	36 58 7	3116	38 25 57	3125	39 53 36	3134
	Aldebaran	W.	28 1 46	2946	29 33 7	2953	31 4 19	2959	32 35 23	2965
	Sun	E.	58 1 7	3293	56 36 47	3303	55 12 39	3313	53 48 43	3324
27	α Arietis	W.	73 35 22	3043	75 4 41	3049	76 33 53	3055	78 2 58	3060
	Mars	W.	47 9 21	3173	48 36 3	3179	50 2 37	3186	51 29 3	3193
	Aldebaran	W.	40 8 43	2997	41 39 0	3002	43 9 10	3008	44 39 13	3014
	Sun	E.	46 51 53	3370	45 29 2	3379	44 6 21	3387	42 43 50	3396
28	α Arietis	W.	85 26 45	3085	86 55 13	3090	88 23 35	3093	89 51 53	3098
	Mars	W.	58 39 28	3219	60 5 15	3224	61 30 56	3228	62 56 32	3232
	Aldebaran	W.	52 7 52	3037	53 37 19	3042	55 6 40	3046	56 35 57	3049
	Sun	E.	35 53 30	3435	34 31 53	3442	33 10 24	3450	31 49 4	3459
29	α Arietis	W.	97 12 9	3116	98 39 59	3119	100 7 46	3122	101 35 29	3125
	Mars	W.	70 3 28	3247	71 28 41	3251	72 53 50	3253	74 18 57	3255
	Aldebaran	W.	64 1 17	3065	65 30 10	3067	66 59 0	3069	68 27 48	3071
	Sun	E.	25 4 50	3506	23 44 32	3517	22 24 27	3531	21 4 37	3546

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	10 43 19.52	9.072	N. 8 6 28.2	54.65	15 53.83	64.39	0 16.68	0.784
Fri.	2	10 46 57.05	9.060	7 44 33.0	54.97	15 54.06	64.35	0 35.63	0.796
Sat.	3	10 50 34.32	9.049	7 22 30.1	55.28	15 54.30	64.31	0 54.86	0.807
Sun.	4	10 54 11.34	9.039	7 0 20.1	55.57	15 54.55	64.27	1 14.35	0.817
Mon.	5	10 57 48.11	9.029	6 38 3.3	55.85	15 54.80	64.24	1 34.08	0.827
Tues.	6	11 1 24.64	9.020	6 15 40.1	56.11	15 55.05	64.21	1 54.05	0.836
Wed.	7	11 5 0.95	9.011	5 53 10.6	56.36	15 55.30	64.18	2 14.23	0.845
Thur.	8	11 8 37.07	9.003	5 30 35.3	56.59	15 55.55	64.16	2 34.61	0.853
Fri.	9	11 12 13.01	8.995	5 7 54.7	56.81	15 55.81	64.14	2 55.17	0.860
Sat.	10	11 15 48.78	8.989	4 45 9.0	57.02	15 56.07	64.12	3 15.90	0.867
Sun.	11	11 19 24.41	8.983	4 22 18.4	57.22	15 56.33	64.10	3 36.76	0.872
Mon.	12	11 22 59.91	8.979	3 59 23.3	57.40	15 56.59	64.09	3 57.74	0.877
Tues.	13	11 26 35.33	8.975	3 36 23.9	57.57	15 56.85	64.08	4 18.82	0.880
Wed.	14	11 30 10.68	8.973	3 13 20.6	57.72	15 57.11	64.07	4 39.97	0.883
Thur.	15	11 33 45.97	8.971	2 50 13.7	57.86	15 57.37	64.06	5 1.18	0.884
Fri.	16	11 37 21.22	8.971	2 27 3.8	57.99	15 57.63	64.06	5 22.42	0.885
Sat.	17	11 40 56.47	8.972	2 3 50.9	58.10	15 57.90	64.06	5 43.66	0.884
Sun.	18	11 44 31.75	8.973	1 40 35.1	58.21	15 58.16	64.07	6 4.88	0.883
Mon.	19	11 48 7.07	8.975	1 17 16.9	58.30	15 58.42	64.08	6 26.06	0.881
Tues.	20	11 51 42.45	8.978	0 53 56.9	58.38	15 58.68	64.09	6 47.18	0.878
Wed.	21	11 55 17.93	8.983	0 30 35.3	58.44	15 58.95	64.10	7 8.19	0.874
Thur.	22	11 58 53.51	8.988	N. 0 7 12.3	58.49	15 59.22	64.11	7 29.09	0.869
Fri.	23	12 2 29.23	8.994	S. 0 16 11.8	58.53	15 59.48	64.13	7 49.86	0.863
Sat.	24	12 6 5.11	9.001	0 39 36.5	58.55	15 59.75	64.15	8 10.49	0.856
Sun.	25	12 9 41.16	9.009	1 3 1.4	58.55	16 0.02	64.17	8 30.93	0.848
Mon.	26	12 13 17.40	9.017	1 26 26.3	58.54	16 0.29	64.20	8 51.18	0.839
Tues.	27	12 16 53.86	9.026	1 49 50.7	58.51	16 0.56	64.23	9 11.22	0.830
Wed.	28	12 20 30.55	9.036	2 13 14.5	58.47	16 0.83	64.27	9 31.03	0.820
Thur.	29	12 24 7.48	9.047	2 36 37.0	58.42	16 1.10	64.31	9 50.60	0.809
Fri.	30	12 27 44.69	9.058	2 59 58.0	58.35	16 1.38	64.35	10 9.90	0.798
Sat.	31	12 31 22.18	9.070	S. 3 23 17.1	58.26	16 1.66	64.39	10 28.91	0.786

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	10 43 19.56	9.072	N. 8 6 27.9	54.65	0 16.67	0.784	10 43 36.23
Fri.	2	10 46 57.14	9.060	7 44 32.4	54.97	0 35.64	0.796	10 47 32.78
Sat.	3	10 50 34.46	9.049	7 22 29.3	55.28	0 54.88	0.807	10 51 29.34
Sun.	4	10 54 11.53	9.039	7 0 18.9	55.57	1 14.36	0.817	10 55 25.89
Mon.	5	10 57 48.35	9.029	6 38 1.8	55.85	1 34.09	0.827	10 59 22.44
Tues.	6	11 1 24.93	9.020	6 15 38.3	56.11	1 54.07	0.836	11 3 19.00
Wed.	7	11 5 1.29	9.011	5 53 8.5	56.36	2 14.26	0.845	11 7 15.55
Thur.	8	11 8 37.46	9.003	5 30 32.9	56.59	2 34.64	0.853	11 11 12.10
Fri.	9	11 12 13.45	8.995	5 7 52.0	56.81	2 55.20	0.860	11 15 8.65
Sat.	10	11 15 49.27	8.989	4 45 6.0	57.02	3 15.94	0.867	11 19 5.21
Sun.	11	11 19 24.95	8.983	4 22 15.0	57.22	3 36.81	0.872	11 23 1.76
Mon.	12	11 23 0.51	8.979	3 59 19.5	57.40	3 57.80	0.877	11 26 58.31
Tues.	13	11 26 35.98	8.975	3 36 19.8	57.57	4 18.86	0.880	11 30 54.84
Wed.	14	11 30 11.38	8.973	3 13 16.2	57.72	4 40.03	0.883	11 34 51.41
Thur.	15	11 33 46.72	8.971	2 50 9.0	57.86	5 1.25	0.884	11 38 47.97
Fri.	16	11 37 22.03	8.971	2 26 58.7	57.99	5 22.49	0.885	11 42 44.52
Sat.	17	11 40 57.33	8.972	2 3 45.4	58.10	5 43.74	0.884	11 46 41.07
Sun.	18	11 44 32.66	8.973	1 40 29.3	58.21	6 4.96	0.883	11 50 37.62
Mon.	19	11 48 8.03	8.975	1 17 10.8	58.30	6 26.14	0.881	11 54 34.17
Tues.	20	11 51 43.46	8.978	0 53 50.4	58.38	6 47.27	0.878	11 58 30.73
Wed.	21	11 55 18.99	8.983	0 30 28.4	58.44	7 8.29	0.874	12 2 27.28
Thur.	22	11 58 54.63	8.988	N. 0 7 5.0	58.49	7 29.20	0.869	12 6 23.83
Fri.	23	12 2 30.41	8.994	S. 0 16 19.4	58.53	7 49.97	0.863	12 10 20.38
Sat.	24	12 6 6.34	9.001	0 39 44.4	58.55	8 10.60	0.856	12 14 16.94
Sun.	25	12 9 42.44	9.009	1 3 9.6	58.55	8 31.05	0.848	12 18 13.49
Mon.	26	12 13 18.73	9.017	1 26 34.9	58.54	8 51.31	0.839	12 22 10.04
Tues.	27	12 16 55.24	9.026	1 49 59.7	58.51	9 11.35	0.830	12 26 6.59
Wed.	28	12 20 31.98	9.036	2 13 23.8	58.47	9 31.16	0.820	12 30 3.14
Thur.	29	12 24 8.96	9.047	2 36 46.6	58.42	9 50.73	0.809	12 33 59.69
Fri.	30	12 27 46.22	9.058	3 0 7.9	58.35	10 10.03	0.798	12 37 56.25
Sat.	31	12 31 23.76	9.070	S. 3 23 27.3	58.26	10 29.04	0.786	12 41 52.80

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ	THE SUN'S True LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	245	159 15 8.6	14 22.4	145.38	—0.59	0.0037045	44.3	13 14 13.31
2	246	160 13 18.8	12 32.5	145.45	0.50	.0035973	45.0	13 10 17.40
3	247	161 11 30.6	10 44.2	145.52	0.40	.0034883	45.7	13 6 21.49
4	248	162 9 44.0	8 57.5	145.59	0.28	.0033777	46.3	13 2 25.58
5	249	163 7 59.0	7 12.4	145.66	—0.14	.0032657	46.9	12 58 29.67
6	250	164 6 15.6	5 28.9	145.72	0.00	.0031522	47.5	12 54 33.77
7	251	165 4 33.8	3 47.0	145.79	+0.13	.0030375	48.0	12 50 37.86
8	252	166 2 53.5	2 6.6	145.85	0.26	.0029217	48.4	12 46 41.95
9	253	167 1 14.7	0 27.7	145.92	0.36	.0028048	48.8	12 42 46.04
10	254	167 59 37.4	58 50.3	145.98	0.45	.0026873	49.1	12 38 50.13
11	255	168 58 1.7	57 14.5	146.05	0.51	.0025692	49.3	12 34 54.23
12	256	169 56 27.7	55 40.5	146.11	0.54	.0024506	49.5	12 30 58.32
13	257	170 54 55.4	54 8.1	146.18	0.53	.0023317	49.6	12 27 2.41
14	258	171 53 24.9	52 37.5	146.26	0.49	.0022125	49.7	12 23 6.50
15	259	172 51 56.2	51 8.7	146.34	0.43	.0020931	49.8	12 19 10.60
16	260	173 50 29.4	49 41.8	146.42	0.34	.0019736	49.8	12 15 14.70
17	261	174 49 4.5	48 16.9	146.50	0.23	.0018541	49.8	12 11 18.79
18	262	175 47 41.6	46 53.9	146.59	+0.12	.0017346	49.8	12 7 22.88
19	263	176 46 20.8	45 33.0	146.68	—0.01	.0016151	49.8	12 3 26.97
20	264	177 45 2.1	44 14.2	146.77	0.14	.0014956	49.8	11 59 31.07
21	265	178 43 45.7	42 57.7	146.86	0.27	.0013759	49.9	11 55 35.17
22	266	179 42 31.5	41 43.5	146.95	0.38	.0012559	50.1	11 51 39.26
23	267	180 41 19.6	40 31.5	147.04	0.47	.0011355	50.2	11 47 43.35
24	268	181 40 10.0	39 21.8	147.14	0.54	.0010148	50.4	11 43 47.44
25	269	182 39 2.7	38 14.4	147.24	0.57	.0008935	50.6	11 39 51.54
26	270	183 37 57.7	37 9.3	147.34	0.57	.0007717	50.9	11 35 55.64
27	271	184 36 55.0	36 6.6	147.43	0.55	.0006494	51.2	11 31 59.73
28	272	185 35 54.4	35 5.9	147.52	0.51	.0005263	51.5	11 28 3.82
29	273	186 34 56.0	34 7.4	147.61	0.43	.0004024	51.9	11 24 7.91
30	274	187 33 59.7	33 11.0	147.70	0.31	.0002776	52.2	11 20 12.00
31	275	188 33 5.6	32 16.8	147.79	—0.18	0.0001519	52.5	11 16 16.10

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 43.6	14 44.2	53 56.1	+0.11	53 58.1	+0.22	0 3.1	1.74	0.2
2	14 45.1	14 46.4	54 1.5	0.34	54 6.2	0.45	0 44.9	1.74	1.2
3	14 48.0	14 50.1	54 12.3	0.57	54 20.0	0.70	1 27.1	1.77	2.2
4	14 52.6	14 55.5	54 29.2	0.83	54 39.9	0.97	2 10.2	1.82	3.2
5	14 58.9	15 2.8	54 52.4	1.11	55 6.5	1.25	2 54.9	1.90	4.2
6	15 7.1	15 11.9	55 22.4	1.40	55 40.1	1.55	3 41.6	2.00	5.2
7	15 17.2	15 22.9	55 59.5	1.69	56 20.6	1.82	4 30.9	2.11	6.2
8	15 29.1	15 35.7	56 43.3	1.95	57 7.4	2.07	5 22.8	2.21	7.2
9	15 42.6	15 49.8	57 32.8	2.16	57 59.1	2.22	6 17.0	2.30	8.2
10	15 57.1	16 4.4	58 26.0	2.25	58 53.0	2.24	7 12.9	2.36	9.2
11	16 11.7	16 18.6	59 19.5	2.18	59 45.1	2.07	8 9.8	2.38	10.2
12	16 25.1	16 31.0	60 8.9	1.90	60 30.4	1.68	9 6.8	2.37	11.2
13	16 36.0	16 40.0	60 48.9	1.39	61 3.6	1.06	10 3.4	2.35	12.2
14	16 42.9	16 44.5	61 14.2	+0.69	61 20.2	+0.29	10 59.5	2.32	13.2
15	16 44.8	16 43.7	61 21.2	−0.12	61 17.2	−0.54	11 55.1	2.31	14.2
16	16 41.3	16 37.6	61 8.4	0.94	60 54.9	1.31	12 50.5	2.31	15.2
17	16 32.8	16 27.0	60 37.2	1.64	60 15.8	1.92	13 45.9	2.31	16.2
18	16 20.3	16 13.1	59 51.4	2.14	59 24.7	2.30	14 41.4	2.31	17.2
19	16 5.4	15 57.5	58 56.5	2.40	58 27.4	2.44	15 36.7	2.29	18.2
20	15 49.5	15 41.7	57 58.1	2.43	57 29.3	2.37	16 31.2	2.25	19.2
21	15 34.1	15 26.8	57 1.4	2.27	56 34.9	2.14	17 24.3	2.18	20.2
22	15 20.1	15 13.8	56 10.1	1.99	55 47.1	1.82	18 15.6	2.09	21.2
23	15 8.2	15 3.1	55 26.3	1.64	55 7.7	1.45	19 4.6	1.99	22.2
24	14 58.7	14 54.9	54 51.5	1.26	54 37.4	1.07	19 51.3	1.91	23.2
25	14 51.7	14 49.1	54 25.7	0.88	54 16.2	0.70	20 36.1	1.83	24.2
26	14 47.1	14 45.6	54 8.8	0.52	54 3.5	0.36	21 19.4	1.78	25.2
27	14 44.7	14 44.3	54 0.2	−0.20	53 58.8	−0.05	22 1.7	1.75	26.2
28	14 44.4	14 44.9	53 59.0	+0.09	54 0.9	+0.22	22 43.6	1.75	27.2
29	14 45.8	14 47.1	54 4.2	0.33	54 8.9	0.44	23 25.8	1.77	28.2
30	14 48.7	14 50.6	54 14.8	0.54	54 21.9	0.64	6		29.2
31	14 52.8	14 55.4	54 30.1	+0.72	54 39.3	+0.81	0 8.9	1.82	0.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 46 37.84	1.8586	N. 3 4 41.7	9.960
1	10 48 29.34	1.8582	2 54 43.7	9.972
2	10 50 20.82	1.8578	2 44 45.0	9.984
3	10 52 12.28	1.8574	2 34 45.6	9.995
4	10 54 3.71	1.8571	2 24 45.6	10.005
5	10 55 55.13	1.8568	2 14 45.0	10.014
6	10 57 46.53	1.8565	2 4 43.9	10.023
7	10 59 37.92	1.8563	1 54 42.2	10.032
8	11 1 29.29	1.8562	1 44 40.1	10.040
9	11 3 20.66	1.8561	1 34 37.5	10.047
10	11 5 12.02	1.8560	1 24 34.4	10.053
11	11 7 3.38	1.8560	1 14 31.0	10.059
12	11 8 54.74	1.8560	1 4 27.3	10.064
13	11 10 46.10	1.8560	0 54 23.3	10.069
14	11 12 37.46	1.8561	0 44 19.0	10.073
15	11 14 28.83	1.8562	0 34 14.5	10.077
16	11 16 20.21	1.8564	0 24 9.8	10.080
17	11 18 11.60	1.8566	0 14 4.9	10.082
18	11 20 3.00	1.8568	N. 0 3 59.9	10.084
19	11 21 54.42	1.8571	S. 0 6 5.2	10.085
20	11 23 45.85	1.8574	0 16 10.3	10.085
21	11 25 37.30	1.8578	0 26 15.4	10.085
22	11 27 28.78	1.8582	0 36 20.5	10.084
23	11 29 20.29	1.8587	S. 0 46 25.5	10.082

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 31 11.82	1.8591	S. 0 56 30.4	10.080
1	11 33 3.38	1.8596	1 6 35.2	10.078
2	11 34 54.97	1.8602	1 16 39.8	10.075
3	11 36 46.60	1.8608	1 26 44.2	10.071
4	11 38 38.27	1.8615	1 36 48.3	10.066
5	11 40 29.98	1.8622	1 46 52.1	10.061
6	11 42 21.73	1.8629	1 56 55.6	10.055
7	11 44 13.53	1.8637	2 6 58.7	10.049
8	11 46 5.37	1.8645	2 17 1.5	10.042
9	11 47 57.26	1.8653	2 27 3.8	10.034
10	11 49 49.21	1.8662	2 37 5.6	10.026
11	11 51 41.21	1.8671	2 47 6.9	10.017
12	11 53 33.26	1.8681	2 57 7.7	10.008
13	11 55 25.37	1.8691	3 7 7.9	9.998
14	11 57 17.55	1.8701	3 17 7.4	9.987
15	11 59 9.79	1.8712	3 27 6.3	9.976
16	12 1 2.10	1.8724	3 37 4.5	9.964
17	12 2 54.48	1.8736	3 47 2.0	9.951
18	12 4 46.93	1.8748	3 56 58.6	9.937
19	12 6 39.46	1.8761	4 6 54.4	9.923
20	12 8 32.06	1.8774	4 16 49.4	9.908
21	12 10 24.74	1.8787	4 26 43.5	9.893
22	12 12 17.50	1.8801	4 36 36.6	9.878
23	12 14 10.35	1.8815	4 46 28.8	9.862
24	12 16 3.28	1.8829	S. 4 56 20.0	9.845

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 16 3.28	1.8829	S. 4 56 20.0	9.845
1	12 17 56.30	1.8844	5 6 10.1	9.827
2	12 19 49.41	1.8860	5 15 59.2	9.808
3	12 21 42.62	1.8876	5 25 47.1	9.789
4	12 23 35.92	1.8892	5 35 33.9	9.769
5	12 25 29.32	1.8908	5 45 19.5	9.749
6	12 27 22.82	1.8925	5 55 3.8	9.728
7	12 29 16.42	1.8942	6 4 46.9	9.707
8	12 31 10.13	1.8960	6 14 28.6	9.685
9	12 33 3.95	1.8979	6 24 9.0	9.662
10	12 34 57.88	1.8998	6 33 48.0	9.638
11	12 36 51.92	1.9017	6 43 25.6	9.614
12	12 38 46.08	1.9037	6 53 1.7	9.589
13	12 40 40.36	1.9057	7 2 36.3	9.563
14	12 42 34.76	1.9077	7 12 9.3	9.537
15	12 44 29.28	1.9097	7 21 40.8	9.511
16	12 46 23.92	1.9118	7 31 10.6	9.483
17	12 48 18.69	1.9139	7 40 38.8	9.455
18	12 50 13.59	1.9160	7 50 5.2	9.426
19	12 52 8.62	1.9182	7 59 29.9	9.397
20	12 54 3.78	1.9205	8 8 52.8	9.367
21	12 55 59.09	1.9229	8 18 13.9	9.336
22	12 57 54.53	1.9252	8 27 33.1	9.305
23	12 59 50.11	1.9276	S. 8 36 50.4	9.273

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 1 45.84	1.9300	S. 8 46 5.8	9.240
1	13 3 41.71	1.9324	8 55 19.2	9.207
2	13 5 37.73	1.9349	9 4 30.6	9.173
3	13 7 33.90	1.9374	9 13 39.9	9.138
4	13 9 30.22	1.9400	9 22 47.1	9.102
5	13 11 26.70	1.9426	9 31 52.1	9.066
6	13 13 23.33	1.9452	9 40 55.0	9.029
7	13 15 20.12	1.9478	9 49 55.6	8.991
8	13 17 17.07	1.9505	9 58 53.9	8.953
9	13 19 14.19	1.9533	10 7 49.9	8.914
10	13 21 11.47	1.9561	10 16 43.6	8.875
11	13 23 8.92	1.9589	10 25 34.9	8.835
12	13 25 6.54	1.9618	10 34 23.8	8.794
13	13 27 4.33	1.9647	10 43 10.2	8.752
14	13 29 2.30	1.9676	10 51 54.0	8.710
15	13 31 0.44	1.9705	11 0 35.3	8.667
16	13 32 58.76	1.9735	11 9 14.0	8.623
17	13 34 57.26	1.9765	11 17 50.0	8.578
18	13 36 55.94	1.9796	11 26 23.4	8.533
19	13 38 54.81	1.9827	11 34 54.0	8.487
20	13 40 53.86	1.9858	11 43 21.8	8.440
21	13 42 53.10	1.9889	11 51 46.8	8.393
22	13 44 52.53	1.9921	12 0 9.0	8.345
23	13 46 52.15	1.9953	12 8 28.3	8.297
24	13 48 51.97	1.9985	S. 12 16 44.6	8.247

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 48 51.97	1.9986	S.12 16 44.6	8.247
1	13 50 51.98	2.0018	12 24 58.0	8.197
2	13 52 52.19	2.0051	12 33 8.3	8.147
3	13 54 52.60	2.0085	12 41 15.6	8.096
4	13 56 53.21	2.0119	12 49 19.7	8.042
5	13 58 54.02	2.0152	12 57 20.7	7.989
6	14 0 55.04	2.0187	13 5 18.4	7.935
7	14 2 56.27	2.0222	13 13 12.9	7.881
8	14 4 57.70	2.0257	13 21 4.1	7.826
9	14 6 59.34	2.0292	13 28 52.0	7.770
10	14 9 1.20	2.0327	13 36 36.5	7.714
11	14 11 3.27	2.0362	13 44 17.6	7.657
12	14 13 5.55	2.0398	13 51 55.3	7.599
13	14 15 8.05	2.0435	13 59 29.4	7.539
14	14 17 10.77	2.0471	14 7 0.0	7.479
15	14 19 13.70	2.0507	14 14 27.0	7.419
16	14 21 16.86	2.0545	14 21 50.3	7.358
17	14 23 20.24	2.0582	14 29 9.9	7.296
18	14 25 23.84	2.0619	14 36 25.8	7.234
19	14 27 27.67	2.0657	14 43 38.0	7.171
20	14 29 31.72	2.0694	14 50 46.3	7.107
21	14 31 36.00	2.0732	14 57 50.8	7.042
22	14 33 40.51	2.0770	15 4 51.3	6.976
23	14 35 45.25	2.0809	S.15 11 47.9	6.910

TUESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 37 50.22	2.0848	S.15 18 40.5	6.843
1	14 39 55.42	2.0887	15 25 29.0	6.775
2	14 42 0.86	2.0925	15 32 13.5	6.706
3	14 44 6.53	2.0964	15 38 53.8	6.637
4	14 46 12.43	2.1003	15 45 29.9	6.567
5	14 48 18.57	2.1043	15 52 1.8	6.496
6	14 50 24.95	2.1083	15 58 29.4	6.425
7	14 52 31.57	2.1123	16 4 52.7	6.352
8	14 54 38.43	2.1163	16 11 11.7	6.279
9	14 56 45.53	2.1203	16 17 26.2	6.205
10	14 58 52.86	2.1243	16 23 36.3	6.131
11	15 1 0.44	2.1283	16 29 41.9	6.056
12	15 3 8.26	2.1323	16 35 43.0	5.980
13	15 5 16.32	2.1364	16 41 39.5	5.903
14	15 7 24.63	2.1405	16 47 31.3	5.825
15	15 9 33.18	2.1446	16 53 18.5	5.747
16	15 11 41.98	2.1487	16 59 0.9	5.667
17	15 13 51.02	2.1527	17 4 38.6	5.587
18	15 16 0.30	2.1568	17 10 11.4	5.506
19	15 18 9.83	2.1608	17 15 39.4	5.425
20	15 20 19.60	2.1649	17 21 2.4	5.343
21	15 22 29.62	2.1691	17 26 20.5	5.260
22	15 24 39.89	2.1732	17 31 33.6	5.176
23	15 26 50.41	2.1773	17 36 41.6	5.092
24	15 29 1.17	2.1814	S.17 41 44.6	5.007

WEDNESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 29 1.17	2.1814	S.17 41 44.6	5.007
1	15 31 12.18	2.1855	17 46 42.4	4.921
2	15 33 23.43	2.1896	17 51 35.1	4.834
3	15 35 34.93	2.1937	17 56 22.5	4.747
4	15 37 46.67	2.1978	18 1 4.7	4.659
5	15 39 58.66	2.2019	18 5 41.6	4.570
6	15 42 10.90	2.2060	18 10 13.1	4.480
7	15 44 23.38	2.2101	18 14 39.2	4.389
8	15 46 36.11	2.2142	18 18 59.8	4.298
9	15 48 49.08	2.2182	18 23 15.0	4.207
10	15 51 2.29	2.2223	18 27 24.6	4.114
11	15 53 15.75	2.2263	18 31 28.7	4.021
12	15 55 29.45	2.2304	18 35 27.1	3.927
13	15 57 43.39	2.2344	18 39 19.9	3.832
14	15 59 57.58	2.2384	18 43 6.9	3.737
15	16 2 12.01	2.2424	18 46 48.2	3.641
16	16 4 26.67	2.2464	18 50 23.8	3.544
17	16 6 41.58	2.2504	18 53 53.5	3.446
18	16 8 56.72	2.2544	18 57 17.3	3.347
19	16 11 12.10	2.2583	19 0 35.2	3.248
20	16 13 27.72	2.2623	19 3 47.1	3.148
21	16 15 43.57	2.2662	19 6 53.0	3.048
22	16 17 59.66	2.2701	19 9 52.9	2.947
23	16 20 15.98	2.2739	S.19 12 46.7	2.846

THURSDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 22 32.53	2.2778	S.19 15 34.4	2.743
1	16 24 49.31	2.2816	19 18 15.9	2.640
2	16 27 6.32	2.2854	19 20 51.2	2.536
3	16 29 23.55	2.2891	19 23 20.3	2.432
4	16 31 41.01	2.2929	19 25 43.1	2.327
5	16 33 58.69	2.2966	19 27 59.6	2.222
6	16 36 16.60	2.3003	19 30 9.7	2.115
7	16 38 34.73	2.3040	19 32 13.4	2.008
8	16 40 53.08	2.3076	19 34 10.7	1.901
9	16 43 11.64	2.3112	19 36 1.5	1.793
10	16 45 30.42	2.3148	19 37 45.9	1.684
11	16 47 49.41	2.3183	19 39 23.7	1.575
12	16 50 8.62	2.3218	19 40 54.9	1.465
13	16 52 28.03	2.3252	19 42 19.5	1.355
14	16 54 47.65	2.3287	19 43 37.5	1.244
15	16 57 7.48	2.3322	19 44 48.8	1.132
16	16 59 27.51	2.3356	19 45 53.4	1.020
17	17 1 47.75	2.3389	19 46 51.2	0.907
18	17 4 8.18	2.3422	19 47 42.3	0.794
19	17 6 28.81	2.3454	19 48 26.5	0.680
20	17 8 49.63	2.3486	19 49 3.9	0.566
21	17 11 10.64	2.3518	19 49 34.4	0.452
22	17 13 31.84	2.3549	19 49 58.1	0.337
23	17 15 53.23	2.3580	19 50 14.8	0.221
24	17 18 14.80	2.3611	S.19 50 24.6	0.105

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 9.					SUNDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 18 14.80	2.3611	S.19 50 24.6	0.105	0	19 14 9.31	2.4484	S.17 36 15.3	5.729
1	17 20 36.56	2.3641	19 50 27.4	0.012	1	19 16 36.23	2.4489	17 30 27.9	5.849
2	17 22 58.49	2.3670	19 50 23.2	0.129	2	19 19 3.18	2.4494	17 24 33.4	5.969
3	17 25 20.60	2.3699	19 50 12.0	0.246	3	19 21 30.16	2.4498	17 18 31.7	6.088
4	17 27 42.88	2.3728	19 49 53.7	0.364	4	19 23 57.16	2.4502	17 12 22.8	6.207
5	17 30 5.34	2.3757	19 49 28.3	0.482	5	19 26 24.19	2.4506	17 6 6.8	6.326
6	17 32 27.96	2.3784	19 48 55.9	0.600	6	19 28 51.23	2.4509	16 59 43.7	6.444
7	17 34 50.74	2.3811	19 48 16.3	0.719	7	19 31 18.29	2.4512	16 53 13.5	6.562
8	17 37 13.69	2.3838	19 47 29.6	0.838	8	19 33 45.37	2.4514	16 46 36.3	6.679
9	17 39 36.80	2.3864	19 46 35.7	0.958	9	19 36 12.46	2.4516	16 39 52.1	6.795
10	17 42 0.06	2.3890	19 45 34.6	1.078	10	19 38 39.56	2.4517	16 33 0.9	6.911
11	17 44 23.48	2.3916	19 44 26.3	1.199	11	19 41 6.66	2.4517	16 26 2.8	7.027
12	17 46 47.05	2.3941	19 43 10.7	1.320	12	19 43 33.77	2.4517	16 18 57.7	7.142
13	17 49 10.77	2.3965	19 41 47.9	1.441	13	19 46 0.88	2.4517	16 11 45.8	7.256
14	17 51 34.63	2.3989	19 40 17.8	1.562	14	19 48 27.98	2.4517	16 4 27.0	7.369
15	17 53 58.63	2.4012	19 38 40.4	1.683	15	19 50 55.08	2.4517	15 57 1.4	7.482
16	17 56 22.77	2.4034	19 36 55.8	1.805	16	19 53 22.18	2.4516	15 49 29.1	7.595
17	17 58 47.05	2.4057	19 35 3.8	1.927	17	19 55 49.27	2.4514	15 41 50.0	7.707
18	18 1 11.46	2.4079	19 33 4.5	2.050	18	19 58 16.35	2.4512	15 34 4.3	7.818
19	18 3 36.00	2.4100	19 30 57.9	2.172	19	20 0 43.41	2.4509	15 26 11.9	7.928
20	18 6 0.66	2.4121	19 28 43.9	2.294	20	20 3 10.46	2.4506	15 18 12.9	8.037
21	18 8 25.45	2.4142	19 26 22.6	2.417	21	20 5 37.49	2.4503	15 10 7.4	8.146
22	18 10 50.36	2.4161	19 23 53.9	2.540	22	20 8 4.50	2.4500	15 1 55.4	8.254
23	18 13 15.38	2.4180	S.19 21 17.8	2.663	23	20 10 31.49	2.4497	S.14 53 36.9	8.362
	SATURDAY 10.					MONDAY 12.			
0	18 15 40.52	2.4199	S.19 18 34.4	2.786	0	20 12 58.46	2.4493	S.14 45 12.0	8.468
1	18 18 5.77	2.4217	19 15 43.6	2.909	1	20 15 25.40	2.4488	14 36 40.8	8.573
2	18 20 31.12	2.4234	19 12 45.3	3.032	2	20 17 52.32	2.4484	14 28 3.2	8.676
3	18 22 56.58	2.4251	19 9 39.6	3.156	3	20 20 19.21	2.4479	14 19 19.3	8.782
4	18 25 22.13	2.4267	19 6 26.6	3.279	4	20 22 46.07	2.4474	14 10 29.3	8.885
5	18 27 47.78	2.4283	19 3 6.2	3.402	5	20 25 12.90	2.4468	14 1 33.1	8.987
6	18 30 13.53	2.4298	18 59 38.3	3.526	6	20 27 39.69	2.4462	13 52 30.9	9.088
7	18 32 39.37	2.4313	18 56 3.0	3.649	7	20 30 6.44	2.4456	13 43 22.6	9.188
8	18 35 5.29	2.4328	18 52 20.4	3.773	8	20 32 33.16	2.4450	13 34 8.4	9.287
9	18 37 31.30	2.4342	18 48 30.4	3.896	9	20 34 59.84	2.4443	13 24 48.2	9.386
10	18 39 57.39	2.4355	18 44 32.9	4.020	10	20 37 26.48	2.4436	13 15 22.1	9.483
11	18 42 23.55	2.4367	18 40 28.0	4.143	11	20 39 53.08	2.4429	13 5 50.3	9.578
12	18 44 49.79	2.4379	18 36 15.7	4.266	12	20 42 19.63	2.4423	12 56 12.7	9.673
13	18 47 16.10	2.4391	18 31 56.0	4.389	13	20 44 46.15	2.4416	12 46 29.4	9.767
14	18 49 42.48	2.4402	18 27 29.0	4.512	14	20 47 12.62	2.4408	12 36 40.6	9.860
15	18 52 8.92	2.4413	18 22 54.6	4.635	15	20 49 39.04	2.4400	12 26 46.2	9.952
16	18 54 35.43	2.4423	18 18 12.8	4.758	16	20 52 5.42	2.4392	12 16 46.4	10.043
17	18 57 1.99	2.4432	18 13 23.7	4.880	17	20 54 31.74	2.4383	12 6 41.1	10.132
18	18 59 28.61	2.4441	18 8 27.2	5.002	18	20 56 58.02	2.4375	11 56 30.5	10.221
19	19 1 55.28	2.4449	18 3 23.5	5.123	19	20 59 24.25	2.4367	11 46 14.6	10.308
20	19 4 22.00	2.4457	17 58 12.4	5.245	20	21 1 50.43	2.4359	11 35 53.5	10.393
21	19 6 48.76	2.4464	17 52 54.0	5.367	21	21 4 16.56	2.4351	11 25 27.3	10.478
22	19 9 15.57	2.4471	17 47 28.4	5.488	22	21 6 42.64	2.4342	11 14 56.1	10.562
23	19 11 42.42	2.4478	17 41 55.5	5.609	23	21 9 8.66	2.4332	11 4 19.9	10.645
24	19 14 9.31	2.4484	S.17 36 15.3	5.729	24	21 11 34.63	2.4323	S.10 53 38.7	10.726

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 11 34.63	2.4323	S. 10 53 38.7	10.726
1	21 14 0.54	2.4314	10 42 52.7	10.806
2	21 16 26.40	2.4306	10 32 2.0	10.885
3	21 18 52.21	2.4297	10 21 6.6	10.962
4	21 21 17.96	2.4287	10 10 6.6	11.038
5	21 23 43.65	2.4277	9 59 2.1	11.112
6	21 26 9.29	2.4268	9 47 53.1	11.185
7	21 28 34.87	2.4259	9 36 39.8	11.257
8	21 31 0.40	2.4250	9 25 22.2	11.328
9	21 33 25.87	2.4241	9 14 0.4	11.397
10	21 35 51.29	2.4232	9 2 34.5	11.465
11	21 38 16.65	2.4222	8 51 4.6	11.532
12	21 40 41.95	2.4212	8 39 30.7	11.597
13	21 43 7.19	2.4202	8 27 53.0	11.660
14	21 45 32.38	2.4193	8 16 11.5	11.722
15	21 47 57.51	2.4184	8 4 26.3	11.782
16	21 50 22.59	2.4175	7 52 37.6	11.842
17	21 52 47.61	2.4166	7 40 45.3	11.900
18	21 55 12.58	2.4157	7 28 49.6	11.956
19	21 57 37.49	2.4147	7 16 50.6	12.010
20	22 0 2.35	2.4138	7 4 48.4	12.063
21	22 2 27.15	2.4129	6 52 43.0	12.115
22	22 4 51.90	2.4120	6 40 34.6	12.164
23	22 7 16.60	2.4112	S. 6 28 23.3	12.212

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 9 41.24	2.4103	S. 6 16 9.1	12.259
1	22 12 5.83	2.4094	6 3 52.1	12.306
2	22 14 30.37	2.4086	5 51 32.5	12.349
3	22 16 54.86	2.4077	5 39 10.3	12.391
4	22 19 19.30	2.4069	5 26 45.6	12.432
5	22 21 43.69	2.4061	5 14 18.5	12.471
6	22 24 8.03	2.4053	5 1 49.1	12.508
7	22 26 32.33	2.4046	4 49 17.5	12.543
8	22 28 56.58	2.4038	4 36 43.9	12.577
9	22 31 20.78	2.4030	4 24 8.3	12.610
10	22 33 44.94	2.4022	4 11 30.7	12.641
11	22 36 9.05	2.4015	3 58 51.3	12.671
12	22 38 33.12	2.4008	3 46 10.2	12.699
13	22 40 57.15	2.4001	3 33 27.5	12.725
14	22 43 21.13	2.3994	3 20 43.2	12.749
15	22 45 45.07	2.3987	3 7 57.6	12.772
16	22 48 8.98	2.3981	2 55 10.6	12.793
17	22 50 32.84	2.3974	2 42 22.4	12.812
18	22 52 56.67	2.3968	2 29 33.1	12.830
19	22 55 20.46	2.3962	2 16 42.8	12.847
20	22 57 44.22	2.3957	2 3 51.5	12.861
21	23 0 7.94	2.3951	1 50 59.5	12.873
22	23 2 31.63	2.3945	1 38 6.7	12.884
23	23 4 55.29	2.3940	1 25 13.3	12.894
24	23 7 18.91	2.3935	S. 1 12 19.4	12.901

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	23 7 18.91	2.3936	S. 1 12 19.4	12.901
1	23 9 42.51	2.3931	0 59 25.1	12.907
2	23 12 6.08	2.3926	0 46 30.5	12.911
3	23 14 29.62	2.3921	0 33 35.7	12.914
4	23 16 53.13	2.3917	0 20 40.8	12.915
5	23 19 16.62	2.3912	S. 0 7 45.9	12.916
6	23 21 40.08	2.3908	N. 0 5 9.0	12.913
7	23 24 3.52	2.3904	0 18 3.7	12.909
8	23 26 26.93	2.3901	0 30 58.1	12.903
9	23 28 50.33	2.3898	0 43 52.1	12.896
10	23 31 13.71	2.3895	0 56 45.6	12.887
11	23 33 37.07	2.3892	1 9 38.5	12.876
12	23 36 0.41	2.3889	1 22 30.7	12.864
13	23 38 23.73	2.3886	1 35 22.1	12.850
14	23 40 47.04	2.3883	1 48 12.7	12.834
15	23 43 10.33	2.3881	2 1 2.3	12.817
16	23 45 33.61	2.3879	2 13 50.8	12.798
17	23 47 56.88	2.3877	2 26 38.1	12.777
18	23 50 20.14	2.3876	2 39 24.1	12.755
19	23 52 43.39	2.3874	2 52 8.8	12.732
20	23 55 6.63	2.3873	3 4 52.0	12.707
21	23 57 29.86	2.3872	3 17 33.6	12.680
22	23 59 53.09	2.3870	3 30 13.6	12.652
23	0 2 16.31	2.3869	N. 3 42 51.8	12.623

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 4 39.52	2.3869	N. 3 55 28.2	12.590
1	0 7 2.73	2.3868	4 8 2.6	12.557
2	0 9 25.94	2.3868	4 20 35.0	12.522
3	0 11 49.15	2.3867	4 33 5.2	12.485
4	0 14 12.35	2.3867	4 45 33.2	12.447
5	0 16 35.55	2.3867	4 57 58.9	12.407
6	0 18 58.76	2.3868	5 10 22.1	12.366
7	0 21 21.97	2.3868	5 22 42.9	12.324
8	0 23 45.18	2.3868	5 35 1.0	12.280
9	0 26 8.39	2.3868	5 47 16.4	12.234
10	0 28 31.60	2.3869	5 59 29.1	12.187
11	0 30 54.82	2.3870	6 11 38.9	12.139
12	0 33 18.04	2.3871	6 23 45.8	12.089
13	0 35 41.27	2.3872	6 35 49.6	12.037
14	0 38 4.50	2.3873	6 47 50.3	11.985
15	0 40 27.74	2.3874	6 59 47.8	11.931
16	0 42 50.99	2.3875	7 11 42.0	11.875
17	0 45 14.25	2.3877	7 23 32.8	11.817
18	0 47 37.51	2.3878	7 35 20.1	11.759
19	0 50 0.78	2.3879	7 47 3.9	11.699
20	0 52 24.06	2.3881	7 58 44.0	11.638
21	0 54 47.35	2.3882	8 10 20.4	11.576
22	0 57 10.65	2.3884	8 21 53.1	11.512
23	0 59 33.96	2.3885	8 33 21.8	11.446
24	1 1 57.27	2.3887	N. 8 44 46.6	11.380

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 1 57.27	2.3887	N. 8 44 46.6	11.380
1	1 4 20.60	2.3889	8 56 7.4	11.312
2	1 6 43.94	2.3891	9 7 24.0	11.243
3	1 9 7.29	2.3892	9 18 36.4	11.172
4	1 11 30.64	2.3894	9 29 44.6	11.100
5	1 13 54.00	2.3895	9 40 48.4	11.027
6	1 16 17.38	2.3897	9 51 47.8	10.953
7	1 18 40.76	2.3898	10 2 42.7	10.877
8	1 21 4.16	2.3900	10 13 33.1	10.801
9	1 23 27.57	2.3902	10 24 18.8	10.723
10	1 25 50.99	2.3904	10 34 59.9	10.644
11	1 28 14.42	2.3905	10 45 36.2	10.564
12	1 30 37.85	2.3906	10 56 7.6	10.483
13	1 33 1.29	2.3907	11 6 34.1	10.401
14	1 35 24.74	2.3909	11 16 55.7	10.318
15	1 37 48.20	2.3910	11 27 12.2	10.233
16	1 40 11.66	2.3911	11 37 23.7	10.148
17	1 42 35.13	2.3912	11 47 30.0	10.061
18	1 44 58.61	2.3913	11 57 31.0	9.973
19	1 47 22.09	2.3914	12 7 26.8	9.885
20	1 49 45.58	2.3915	12 17 17.2	9.796
21	1 52 9.07	2.3916	12 27 2.2	9.705
22	1 54 32.57	2.3916	12 36 41.8	9.613
23	1 56 56.06	2.3916	N.12 46 15.8	9.521

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 59 19.56	2.3916	N.12 55 44.3	9.427
1	2 1 43.06	2.3916	13 5 7.1	9.333
2	2 4 6.55	2.3916	13 14 24.3	9.238
3	2 6 30.04	2.3915	13 23 35.7	9.142
4	2 8 53.53	2.3915	13 32 41.4	9.046
5	2 11 17.02	2.3914	13 41 41.2	8.948
6	2 13 40.50	2.3913	13 50 35.2	8.850
7	2 16 3.98	2.3912	13 59 23.2	8.750
8	2 18 27.45	2.3910	14 8 5.2	8.650
9	2 20 50.91	2.3909	14 16 41.2	8.549
10	2 23 14.36	2.3907	14 25 11.1	8.448
11	2 25 37.80	2.3905	14 33 34.9	8.346
12	2 28 1.22	2.3903	14 41 52.6	8.243
13	2 30 24.63	2.3900	14 50 4.1	8.139
14	2 32 48.02	2.3897	14 58 9.3	8.035
15	2 35 11.39	2.3894	15 6 8.3	7.931
16	2 37 34.75	2.3891	15 14 1.0	7.825
17	2 39 58.09	2.3887	15 21 47.3	7.718
18	2 42 21.40	2.3883	15 29 27.2	7.612
19	2 44 44.69	2.3879	15 37 0.7	7.505
20	2 47 7.95	2.3875	15 44 27.8	7.397
21	2 49 31.18	2.3870	15 51 48.4	7.288
22	2 51 54.39	2.3865	15 59 2.4	7.179
23	2 54 17.56	2.3859	16 6 9.9	7.070
24	2 56 40.70	2.3853	N.16 13 10.8	6.960

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	2 56 40.70	2.3853	N.16 13 10.8	6.960
1	2 59 3.80	2.3847	16 20 5.1	6.850
2	3 1 26.87	2.3841	16 26 52.8	6.740
3	3 3 49.90	2.3834	16 33 33.9	6.629
4	3 6 12.88	2.3827	16 40 8.3	6.517
5	3 8 35.82	2.3820	16 46 36.0	6.405
6	3 10 58.72	2.3812	16 52 56.9	6.293
7	3 13 21.56	2.3803	16 59 11.1	6.181
8	3 15 44.36	2.3795	17 5 18.6	6.067
9	3 18 7.11	2.3787	17 11 19.2	5.953
10	3 20 29.80	2.3778	17 17 13.0	5.840
11	3 22 52.43	2.3768	17 23 0.0	5.727
12	3 25 15.01	2.3758	17 28 40.2	5.613
13	3 27 37.52	2.3747	17 34 13.5	5.498
14	3 29 59.97	2.3736	17 39 40.0	5.384
15	3 32 22.35	2.3725	17 44 59.6	5.269
16	3 34 44.67	2.3714	17 50 12.3	5.154
17	3 37 6.92	2.3702	17 55 18.1	5.039
18	3 39 29.09	2.3690	18 0 17.0	4.924
19	3 41 51.19	2.3677	18 5 9.0	4.808
20	3 44 13.21	2.3664	18 9 54.0	4.693
21	3 46 35.15	2.3650	18 14 32.1	4.577
22	3 48 57.01	2.3636	18 19 3.3	4.462
23	3 51 18.78	2.3621	N.18 23 27.5	4.346

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 53 40.46	2.3607	N.18 27 44.8	4.230
1	3 56 2.06	2.3592	18 31 55.1	4.114
2	3 58 23.56	2.3576	18 35 58.5	3.998
3	4 0 44.97	2.3560	18 39 54.9	3.882
4	4 3 6.28	2.3544	18 43 44.3	3.766
5	4 5 27.49	2.3527	18 47 26.8	3.650
6	4 7 48.60	2.3510	18 51 2.3	3.534
7	4 10 9.60	2.3492	18 54 30.9	3.418
8	4 12 30.50	2.3474	18 57 52.5	3.303
9	4 14 51.29	2.3455	19 1 7.2	3.187
10	4 17 11.96	2.3436	19 4 15.0	3.072
11	4 19 32.52	2.3417	19 7 15.8	2.956
12	4 21 52.96	2.3397	19 10 9.7	2.841
13	4 24 13.29	2.3377	19 12 56.7	2.726
14	4 26 33.49	2.3357	19 15 36.8	2.611
15	4 28 53.57	2.3336	19 18 10.0	2.496
16	4 31 13.52	2.3314	19 20 36.3	2.381
17	4 33 33.34	2.3292	19 22 55.7	2.266
18	4 35 53.03	2.3270	19 25 8.2	2.152
19	4 38 12.58	2.3247	19 27 13.9	2.038
20	4 40 32.00	2.3225	19 29 12.7	1.924
21	4 42 51.29	2.3202	19 31 4.7	1.810
22	4 45 10.43	2.3178	19 32 49.9	1.697
23	4 47 29.43	2.3154	19 34 28.3	1.584
24	4 49 48.28	2.3130	N.19 36 0.0	1.471

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 21.					FRIDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 49 48.28	2.3130	N.19 36 0.0	1.471	0	6 37 25.51	2.1623	N.18 44 2.4	3.448
1	4 52 6.98	2.3105	19 37 24.9	1.358	1	6 39 35.14	2.1587	18 40 32.8	3.537
2	4 54 25.54	2.3080	19 38 43.0	1.246	2	6 41 44.55	2.1552	18 36 57.9	3.626
3	4 56 43.94	2.3054	19 39 54.4	1.134	3	6 43 53.75	2.1516	18 33 17.6	3.715
4	4 59 2.19	2.3028	19 40 59.1	1.022	4	6 46 2.74	2.1480	18 29 32.1	3.802
5	5 1 20.28	2.3002	19 41 57.1	0.911	5	6 48 11.51	2.1444	18 25 41.3	3.889
6	5 3 38.22	2.2976	19 42 48.4	0.800	6	6 50 20.07	2.1409	18 21 45.4	3.975
7	5 5 55.99	2.2948	19 43 33.1	0.689	7	6 52 28.42	2.1373	18 17 44.3	4.061
8	5 8 13.60	2.2921	19 44 11.1	0.579	8	6 54 36.55	2.1337	18 13 38.1	4.146
9	5 10 31.05	2.2894	19 44 42.5	0.469	9	6 56 44.46	2.1301	18 9 26.8	4.231
10	5 12 48.33	2.2866	19 45 7.4	0.359	10	6 58 52.16	2.1265	18 5 10.4	4.315
11	5 15 5.45	2.2838	19 45 25.7	0.250	11	7 0 59.65	2.1230	18 0 49.0	4.398
12	5 17 22.39	2.2809	19 45 37.4	0.141	12	7 3 6.92	2.1194	17 56 22.6	4.480
13	5 19 39.16	2.2780	19 45 42.6	0.032	13	7 5 13.98	2.1158	17 51 51.3	4.562
14	5 21 55.75	2.2751	19 45 41.3	0.076	14	7 7 20.82	2.1122	17 47 15.1	4.644
15	5 24 12.17	2.2722	19 45 33.6	0.182	15	7 9 27.45	2.1087	17 42 34.0	4.725
16	5 26 28.41	2.2692	19 45 19.4	0.289	16	7 11 33.86	2.1051	17 37 48.1	4.805
17	5 28 44.47	2.2662	19 44 58.8	0.396	17	7 13 40.06	2.1016	17 32 57.4	4.884
18	5 31 0.35	2.2631	19 44 31.9	0.502	18	7 15 46.05	2.0980	17 28 2.0	4.963
19	5 33 16.04	2.2600	19 43 58.6	0.608	19	7 17 51.83	2.0945	17 23 1.9	5.041
20	5 35 31.55	2.2569	19 43 18.9	0.713	20	7 19 57.39	2.0910	17 17 57.1	5.119
21	5 37 46.87	2.2538	19 42 32.9	0.818	21	7 22 2.74	2.0875	17 12 47.6	5.196
22	5 40 2.01	2.2507	19 41 40.7	0.922	22	7 24 7.89	2.0840	17 7 33.6	5.272
23	5 42 16.96	2.2476	N.19 40 42.3	1.026	23	7 26 12.83	2.0805	N.17 2 15.0	5.347
	THURSDAY 22.					SATURDAY 24.			
0	5 44 31.72	2.2444	N.19 39 37.6	1.129	0	7 28 17.55	2.0770	N.16 56 51.9	5.422
1	5 46 46.29	2.2412	19 38 26.7	1.232	1	7 30 22.06	2.0735	16 51 24.3	5.497
2	5 49 0.66	2.2379	19 37 9.7	1.335	2	7 32 26.37	2.0700	16 45 52.2	5.571
3	5 51 14.83	2.2346	19 35 46.5	1.437	3	7 34 30.47	2.0666	16 40 15.7	5.644
4	5 53 28.81	2.2313	19 34 17.3	1.538	4	7 36 34.36	2.0632	16 34 34.9	5.716
5	5 55 42.59	2.2280	19 32 42.0	1.639	5	7 38 38.05	2.0597	16 28 49.7	5.788
6	5 57 56.17	2.2247	19 31 0.6	1.739	6	7 40 41.53	2.0564	16 23 0.3	5.860
7	6 0 9.56	2.2214	19 29 13.2	1.839	7	7 42 44.81	2.0530	16 17 6.6	5.931
8	6 2 22.74	2.2180	19 27 19.9	1.938	8	7 44 47.89	2.0496	16 11 8.6	6.001
9	6 4 35.72	2.2146	19 25 20.6	2.037	9	7 46 50.77	2.0462	16 5 6.5	6.070
10	6 6 48.49	2.2112	19 23 15.5	2.135	10	7 48 53.44	2.0429	15 59 0.2	6.139
11	6 9 1.06	2.2078	19 21 4.5	2.232	11	7 50 55.91	2.0395	15 52 49.8	6.207
12	6 11 13.43	2.2044	19 18 47.6	2.329	12	7 52 58.18	2.0362	15 46 35.3	6.274
13	6 13 25.59	2.2009	19 16 24.9	2.426	13	7 55 0.25	2.0329	15 40 16.8	6.341
14	6 15 37.54	2.1975	19 13 56.5	2.522	14	7 57 2.13	2.0296	15 33 54.4	6.407
15	6 17 49.28	2.1940	19 11 22.3	2.617	15	7 59 3.81	2.0264	15 27 28.0	6.473
16	6 20 0.82	2.1905	19 8 42.4	2.712	16	8 1 5.30	2.0232	15 20 57.6	6.538
17	6 22 12.14	2.1870	19 5 56.9	2.806	17	8 3 6.60	2.0200	15 14 23.4	6.602
18	6 24 23.26	2.1835	19 3 5.7	2.899	18	8 5 7.70	2.0168	15 7 45.3	6.666
19	6 26 34.17	2.1800	19 0 8.9	2.992	19	8 7 8.61	2.0137	15 1 3.4	6.729
20	6 28 44.86	2.1765	18 57 6.6	3.085	20	8 9 9.34	2.0105	14 54 17.8	6.791
21	6 30 55.34	2.1729	18 53 58.7	3.177	21	8 11 9.88	2.0074	14 47 28.4	6.853
22	6 33 5.61	2.1694	18 50 45.4	3.268	22	8 13 10.23	2.0043	14 40 35.4	6.915
23	6 35 15.67	2.1658	18 47 26.6	3.358	23	8 15 10.40	2.0012	14 33 38.7	6.976
24	6 37 25.51	2.1623	N.18 44 2.4	3.448	24	8 17 10.38	1.9982	N.14 26 38.3	7.036

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 17 10.38	1.9982	N.14 26 38.3	7.036
1	8 19 10.18	1.9952	14 19 34.4	7.095
2	8 21 9.80	1.9922	14 12 26.9	7.154
3	8 23 9.24	1.9892	14 5 15.9	7.212
4	8 25 8.51	1.9863	13 58 1.4	7.270
5	8 27 7.60	1.9833	13 50 43.5	7.327
6	8 29 6.51	1.9804	13 43 22.2	7.383
7	8 31 5.25	1.9776	13 35 57.6	7.438
8	8 33 3.82	1.9748	13 28 29.6	7.493
9	8 35 2.22	1.9720	13 20 58.3	7.548
10	8 37 0.46	1.9692	13 13 23.8	7.602
11	8 38 58.53	1.9664	13 5 46.1	7.655
12	8 40 56.43	1.9637	12 58 5.2	7.708
13	8 42 54.17	1.9610	12 50 21.2	7.760
14	8 44 51.75	1.9584	12 42 34.0	7.811
15	8 46 49.17	1.9558	12 34 43.8	7.862
16	8 48 46.44	1.9532	12 26 50.5	7.912
17	8 50 43.55	1.9506	12 18 54.2	7.962
18	8 52 40.51	1.9480	12 10 55.0	8.011
19	8 54 37.31	1.9455	12 2 52.9	8.059
20	8 56 33.97	1.9431	11 54 47.9	8.107
21	8 58 30.48	1.9407	11 46 40.0	8.155
22	9 0 26.85	1.9382	11 38 29.3	8.202
23	9 2 23.07	1.9358	N.11 30 15.8	8.248

MONDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 4 19.15	1.9335	N.11 21 59.6	8.293
1	9 6 15.09	1.9312	11 13 40.7	8.337
2	9 8 10.89	1.9289	11 5 19.1	8.382
3	9 10 6.56	1.9267	10 56 54.9	8.426
4	9 12 2.09	1.9245	10 48 28.0	8.469
5	9 13 57.49	1.9223	10 39 58.6	8.512
6	9 15 52.77	1.9202	10 31 26.6	8.553
7	9 17 47.92	1.9181	10 22 52.2	8.594
8	9 19 42.94	1.9160	10 14 15.3	8.635
9	9 21 37.84	1.9140	10 5 36.0	8.675
10	9 23 32.62	1.9120	9 56 54.3	8.715
11	9 25 27.28	1.9100	9 48 10.2	8.754
12	9 27 21.82	1.9081	9 39 23.8	8.792
13	9 29 16.25	1.9062	9 30 35.1	8.830
14	9 31 10.56	1.9044	9 21 44.2	8.867
15	9 33 4.77	1.9026	9 12 51.0	8.904
16	9 34 58.87	1.9008	9 3 55.7	8.940
17	9 36 52.87	1.8991	8 54 58.2	8.976
18	9 38 46.76	1.8974	8 45 58.6	9.010
19	9 40 40.55	1.8957	8 36 57.0	9.044
20	9 42 34.24	1.8940	8 27 53.3	9.078
21	9 44 27.83	1.8924	8 18 47.6	9.111
22	9 46 21.33	1.8909	8 9 40.0	9.144
23	9 48 14.74	1.8894	8 0 30.4	9.176
24	9 50 8.06	1.8879	N. 7 51 18.9	9.207

TUESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 50 8.06	1.8879	N. 7 51 18.9	9.207
1	9 52 1.29	1.8865	7 42 5.6	9.237
2	9 53 54.44	1.8851	7 32 50.4	9.267
3	9 55 47.50	1.8837	7 23 33.4	9.297
4	9 57 40.48	1.8824	7 14 14.7	9.326
5	9 59 33.38	1.8811	7 4 54.2	9.355
6	10 1 26.21	1.8799	6 55 32.1	9.383
7	10 3 18.97	1.8787	6 46 8.3	9.411
8	10 5 11.65	1.8775	6 36 42.8	9.437
9	10 7 4.26	1.8763	6 27 15.8	9.462
10	10 8 56.81	1.8753	6 17 47.3	9.488
11	10 10 49.30	1.8742	6 8 17.2	9.513
12	10 12 41.72	1.8732	5 58 45.7	9.538
13	10 14 34.08	1.8722	5 49 12.7	9.562
14	10 16 26.39	1.8714	5 39 38.3	9.585
15	10 18 18.65	1.8705	5 30 2.5	9.607
16	10 20 10.85	1.8696	5 20 25.4	9.629
17	10 22 3.00	1.8688	5 10 47.0	9.651
18	10 23 55.11	1.8680	5 1 7.3	9.672
19	10 25 47.17	1.8672	4 51 26.4	9.692
20	10 27 39.18	1.8666	4 41 44.3	9.712
21	10 29 31.15	1.8659	4 32 1.0	9.731
22	10 31 23.09	1.8653	4 22 16.6	9.749
23	10 33 14.99	1.8647	N. 4 12 31.1	9.767

WEDNESDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 35 6.86	1.8648	N. 4 2 44.5	9.784
1	10 36 58.70	1.8638	3 52 56.9	9.801
2	10 38 50.52	1.8633	3 43 8.4	9.817
3	10 40 42.31	1.8629	3 33 18.9	9.833
4	10 42 34.07	1.8625	3 23 28.4	9.848
5	10 44 25.81	1.8622	3 13 37.1	9.862
6	10 46 17.53	1.8619	3 3 44.9	9.876
7	10 48 9.24	1.8617	2 53 51.9	9.889
8	10 50 0.93	1.8615	2 43 58.2	9.902
9	10 51 52.61	1.8613	2 34 3.7	9.914
10	10 53 44.29	1.8612	2 24 8.5	9.925
11	10 55 35.96	1.8611	2 14 12.7	9.936
12	10 57 27.62	1.8611	2 4 16.2	9.946
13	10 59 19.28	1.8611	1 54 19.1	9.956
14	11 1 10.95	1.8611	1 44 21.5	9.965
15	11 3 2.62	1.8612	1 34 23.3	9.973
16	11 4 54.29	1.8613	1 24 24.7	9.980
17	11 6 45.97	1.8615	1 14 25.7	9.987
18	11 8 37.67	1.8617	1 4 26.2	9.994
19	11 10 29.38	1.8619	0 54 26.3	10.001
20	11 12 21.10	1.8622	0 44 26.1	10.006
21	11 14 12.84	1.8625	0 34 25.6	10.011
22	11 16 4.60	1.8629	0 24 24.8	10.015
23	11 17 56.38	1.8632	0 14 23.7	10.019
24	11 19 48.19	1.8637	N. 0 4 22.5	10.021

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 29.					FRIDAY 30.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	11 19 48.19	1.8637	N. 0 4 22.5	10.021	0	12 4 45.52	1.8863	S. 3 55 27.1	9.903
1	11 21 40.02	1.8642	S. 0 5 38.8	10.023	1	12 6 38.74	1.8877	4 5 20.9	9.890
2	11 23 31.89	1.8647	0 15 40.3	10.025	2	12 8 32.05	1.8892	4 15 13.9	9.876
3	11 25 23.79	1.8653	0 25 41.9	10.027	3	12 10 25.45	1.8907	4 25 6.0	9.862
4	11 27 15.73	1.8659	0 35 43.5	10.027	4	12 12 18.94	1.8923	4 34 57.3	9.847
5	11 29 7.70	1.8666	0 45 45.1	10.027	5	12 14 12.53	1.8939	4 44 47.6	9.831
6	11 30 59.72	1.8673	0 55 46.7	10.026	6	12 16 6.21	1.8955	4 54 37.0	9.815
7	11 32 51.78	1.8680	1 5 48.3	10.025	7	12 17 59.99	1.8972	5 4 25.4	9.798
8	11 34 43.88	1.8688	1 15 49.7	10.023	8	12 19 53.87	1.8989	5 14 12.8	9.780
9	11 36 36.03	1.8696	1 25 51.0	10.020	9	12 21 47.85	1.9006	5 23 59.1	9.762
10	11 38 28.23	1.8704	1 35 52.1	10.016	10	12 23 41.94	1.9024	5 33 44.2	9.743
11	11 40 20.48	1.8712	1 45 53.0	10.012	11	12 25 36.14	1.9042	5 43 28.2	9.723
12	11 42 12.78	1.8722	1 55 53.6	10.008	12	12 27 30.44	1.9060	5 53 11.0	9.703
13	11 44 5.14	1.8732	2 5 53.9	10.002	13	12 29 24.85	1.9078	6 2 52.5	9.682
14	11 45 57.56	1.8742	2 15 53.9	9.997	14	12 31 19.38	1.9098	6 12 32.8	9.660
15	11 47 50.04	1.8752	2 25 53.6	9.991	15	12 33 14.03	1.9117	6 22 11.8	9.638
16	11 49 42.58	1.8763	2 35 52.8	9.984	16	12 35 8.79	1.9137	6 31 49.4	9.615
17	11 51 35.19	1.8774	2 45 51.6	9.976	17	12 37 3.67	1.9157	6 41 25.6	9.591
18	11 53 27.87	1.8786	2 55 49.9	9.967	18	12 38 58.68	1.9178	6 51 0.3	9.567
19	11 55 20.62	1.8798	3 5 47.6	9.957	19	12 40 53.81	1.9199	7 0 33.6	9.542
20	11 57 13.45	1.8810	3 15 44.8	9.947	20	12 42 49.07	1.9220	7 10 5.3	9.515
21	11 59 6.35	1.8823	3 25 41.4	9.937	21	12 44 44.46	1.9242	7 19 35.4	9.488
22	12 0 59.33	1.8836	3 35 37.3	9.926	22	12 46 39.97	1.9264	7 29 3.9	9.461
23	12 2 52.38	1.8849	3 45 32.6	9.915	23	12 48 35.62	1.9286	7 38 30.7	9.433
24	12 4 45.52	1.8863	S. 3 55 27.1	9.903	24	12 50 31.41	1.9309	S. 7 47 56.2	9.405

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	8	17	50.1
○ Full Moon, ...	15	9	9.1
☾ Last Quarter, ...	22	6	54.0
● New Moon, ...	30	10	43.1

	d	h
☾ Perigee, ...	14	20.5
☾ Apogee, ...	27	16.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
3	Sun	W.	24° 37′ 26″	3477	25° 58′ 16″	3467	27° 19′ 17″	3457	28° 40′ 29″	3448
	Jupiter	E.	45 49 32	3084	44 21 3	3081	42 52 30	3077	41 23 52	3072
	Antares	E.	62 6 8	3077	60 37 30	3073	59 8 48	3070	57 40 2	3068
4	Sun	W.	35 29 9	3402	36 51 23	3393	38 13 48	3385	39 36 22	3375
	Jupiter	E.	33 59 17	3047	32 30 3	3042	31 0 42	3035	29 31 13	3020
	Antares	E.	50 15 18	3052	48 46 10	3049	47 16 58	3045	45 47 41	3043
	a Aquilæ	E.	101 41 12	3418	100 19 16	3408	98 57 8	3399	97 34 50	3389
5	Sun	W.	46 31 48	3330	47 55 25	3320	49 19 13	3310	50 43 13	3300
	Saturn	W.	13 33 23	3204	14 59 28	3157	16 26 29	3119	17 54 16	3087
	Spica	W.	7 46 0	2949	9 17 17	2940	10 48 45	2931	12 20 24	2922
	Jupiter	E.	22 1 47	2994	20 31 27	2986	19 0 57	2977	17 30 16	2969
	Antares	E.	38 20 25	3030	36 50 49	3028	35 21 11	3026	33 51 31	3026
	a Aquilæ	E.	90 40 46	3347	89 17 29	3339	87 54 3	3332	86 30 29	3325
6	Sun	W.	57 46 13	3246	59 11 28	3234	60 36 57	3222	62 2 40	3210
	Saturn	W.	25 21 19	2977	26 52 0	2961	28 23 2	2944	29 54 25	2929
	Spica	W.	20 1 40	2873	21 34 33	2863	23 7 39	2853	24 40 58	2842
	Antares	E.	26 23 35	3046	24 54 19	3056	23 25 16	3072	21 56 32	3098
	a Aquilæ	E.	79 30 36	3293	78 6 16	3287	76 41 49	3282	75 17 16	3277
	Fomalhaut	E.	108 43 52	3386	107 21 20	3367	105 58 26	3350	104 35 12	3332
7	Sun	W.	69 15 1	3144	70 42 17	3130	72 9 50	3115	73 37 41	3101
	Saturn	W.	37 36 10	2853	39 9 29	2838	40 43 7	2824	42 17 4	2808
	Spica	W.	32 31 16	2782	34 6 7	2770	35 41 14	2756	37 16 39	2744
	a Aquilæ	E.	68 13 22	3262	66 48 26	3260	65 23 28	3259	63 58 29	3260
	Fomalhaut	E.	97 34 1	3249	96 8 50	3233	94 43 20	3218	93 17 32	3204
8	Sun	W.	81 1 30	3023	82 31 14	3007	84 1 18	2991	85 31 42	2974
	Saturn	W.	50 11 50	2731	51 47 49	2715	53 24 9	2698	55 0 51	2683
	Spica	W.	45 18 13	2673	46 55 29	2657	48 33 6	2643	50 11 3	2627
	Jupiter	W.	15 5 50	2722	16 42 1	2707	18 18 32	2691	19 55 24	2675
	a Aquilæ	E.	56 54 13	3282	55 29 41	3291	54 5 19	3304	52 41 11	3317
	Fomalhaut	E.	86 4 20	3135	84 36 53	3123	83 9 11	3111	81 41 15	3100
	a Pegasi	E.	102 55 7	2841	101 21 32	2825	99 47 36	2808	98 13 18	2791
9	Sun	W.	93 9 4	2887	94 41 39	2869	96 14 37	2851	97 47 59	2833
	Saturn	W.	63 9 51	2599	64 48 47	2582	66 28 7	2564	68 7 51	2547
	Spica	W.	58 26 9	2547	60 6 17	2530	61 46 48	2514	63 27 42	2497
	Jupiter	W.	28 5 3	2595	29 44 5	2578	31 23 30	2561	33 3 18	2544
	a Aquilæ	E.	45 45 48	3439	44 24 16	3478	43 3 27	3524	41 43 29	3576
	Fomalhaut	E.	74 18 18	3052	72 49 9	3044	71 19 51	3037	69 50 24	3032
	a Pegasi	E.	90 16 20	2708	88 39 51	2691	87 2 59	2675	85 25 46	2659
10	Sun	W.	105 40 42	2741	107 16 27	2723	108 52 36	2704	110 29 10	2687
	Saturn	W.	76 32 33	2460	78 14 43	2442	79 57 18	2424	81 40 18	2408
	Spica	W.	71 58 8	2411	73 41 27	2394	75 25 11	2377	77 9 19	2359
	Jupiter	W.	41 28 16	2458	43 10 29	2441	44 53 6	2424	46 36 7	2406
	Antares	W.	27 13 2	2557	28 52 56	2524	30 33 36	2494	32 14 58	2467
	Fomalhaut	E.	62 22 3	3025	60 52 21	3029	59 22 44	3034	57 53 14	3043
	a Pegasi	E.	77 14 19	2582	75 34 59	2567	73 55 19	2553	72 15 20	2540
11	Sun	W.	118 38 7	2596	120 17 7	2579	121 56 31	2561	123 36 19	2545
	Spica	W.	85 56 13	2274	87 42 50	2258	89 29 51	2241	91 17 17	2225

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
3	Sun	W.	30° 1′ 51″	3438	31° 23′ 25″	3428	32° 45′ 10″	3420	34° 7′ 4″	3410
	Jupiter	E.	39 55 8	3068	38 26 19	3063	36 57 24	3059	35 28 24	3053
	Antares	E.	56 11 13	3065	54 42 20	3061	53 13 23	3059	51 44 23	3055
4	Sun	W.	40 59 7	3366	42 22 2	3358	43 45 7	3349	45 8 22	3329
	Jupiter	E.	28 1 37	3023	26 31 53	3016	25 2 0	3009	23 31 58	3001
	Antares	E.	44 18 21	3039	42 48 57	3037	41 19 30	3034	39 49 59	3031
	a Aquilæ	E.	96 12 21	3380	94 49 42	3372	93 26 53	3363	92 3 54	3355
5	Sun	W.	52 7 24	3290	53 31 47	3279	54 56 23	3269	56 21 11	3257
	Saturn	W.	19 22 42	3060	20 51 41	3037	22 21 8	3016	23 51 1	2996
	Spica	W.	13 52 15	2912	15 24 18	2903	16 56 33	2894	18 29 0	2883
	Jupiter	E.	15 59 25	2961	14 28 23	2952	12 57 10	2942	11 25 45	2934
	Antares	E.	32 21 51	3026	30 52 11	3029	29 22 34	3032	27 53 1	3038
	a Aquilæ	E.	85 6 46	3318	83 42 55	3311	82 18 56	3305	80 54 50	3298
6	Sun	W.	63 28 37	3198	64 54 49	3184	66 21 17	3171	67 48 1	3158
	Saturn	W.	31 26 7	2913	32 58 9	2898	34 30 30	2883	36 3 11	2869
	Spica	W.	26 14 31	2831	27 48 19	2818	29 22 23	2807	30 56 42	2795
	Antares	E.	20 28 14	3121	19 0 30	3160	17 33 33	3214	16 7 41	3286
	a Aquilæ	E.	73 52 38	3273	72 27 55	3269	71 3 7	3266	69 38 16	3264
	Fomalhaut	E.	103 11 37	3314	101 47 42	3298	100 23 28	3281	98 58 54	3265
7	Sun	W.	75 5 50	3086	76 34 17	3071	78 3 2	3056	79 32 6	3039
	Saturn	W.	43 51 21	2793	45 25 58	2778	47 0 55	2763	48 36 12	2747
	Spica	W.	38 52 21	2730	40 28 21	2716	42 4 39	2701	43 41 17	2688
	a Aquilæ	E.	62 33 31	3262	61 8 35	3265	59 43 42	3269	58 18 54	3275
	Fomalhaut	E.	91 51 27	3189	90 25 5	3175	88 58 26	3162	87 31 31	3148
8	Sun	W.	87 2 27	2957	88 33 34	2940	90 5 2	2923	91 36 52	2906
	Saturn	W.	56 37 54	2666	58 15 19	2649	59 53 7	2632	61 31 18	2616
	Spica	W.	51 49 21	2612	53 28 0	2596	55 7 1	2580	56 46 24	2564
	Jupiter	W.	21 32 37	2660	23 10 11	2644	24 48 6	2628	26 26 23	2611
	a Aquilæ	E.	51 17 19	3384	49 53 47	3354	48 30 38	3379	47 7 57	3407
	Fomalhaut	E.	80 13 5	3088	78 44 41	3078	77 16 5	3069	75 47 17	3060
	a Pegasi	E.	96 38 38	2774	95 3 36	2757	93 28 12	2740	91 52 27	2725
9	Sun	W.	99 21 44	2817	100 55 53	2797	102 30 25	2779	104 5 21	2760
	Saturn	W.	69 47 59	2530	71 28 31	2512	73 9 27	2494	74 50 48	2477
	Spica	W.	65 8 59	2480	66 50 40	2463	68 32 45	2446	70 15 14	2429
	Jupiter	W.	34 43 30	2527	36 24 5	2510	38 5 4	2492	39 46 28	2475
	a Aquilæ	E.	40 24 29	3637	39 6 35	3709	37 49 57	3792	36 34 47	3892
	Fomalhaut	E.	68 20 51	3028	66 51 13	3025	65 21 31	3023	63 51 47	3023
	a Pegasi	E.	83 48 11	2643	82 10 15	2627	80 31 57	2612	78 53 18	2597
10	Sun	W.	112 6 8	2668	113 43 31	2649	115 21 19	2632	116 59 31	2614
	Saturn	W.	83 23 42	2390	85 7 31	2372	86 51 46	2355	88 36 26	2338
	Spica	W.	78 53 52	2342	80 38 50	2325	82 24 13	2308	84 10 1	2291
	Jupiter	W.	48 19 33	2389	50 3 24	2371	51 47 40	2355	53 32 20	2337
	Antares	W.	33 56 58	2440	35 39 36	2415	37 22 49	2391	39 6 37	2368
	Fomalhaut	E.	56 23 55	3055	54 54 50	3069	53 26 2	3087	51 57 36	3108
	a Pegasi	E.	70 35 2	2526	68 54 25	2514	67 13 31	2501	65 32 19	2489
11	Sun	W.	125 16 30	2528	126 57 4	2512	128 38 0	2496	130 19 19	2481
	Spica	W.	93 5 7	2210	94 53 20	2194	96 41 57	2178	98 30 57	2163

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	Jupiter	W.	55° 17′ 25″	2320	57° 2′ 55″	2304	58° 48′ 49″	2287	60° 35′ 8″	2271
	Antares	W.	40 50 58	2346	42 35 51	2324	44 21 15	2304	46 7 8	2284
	Fomalhaut	E.	50 29 36	3134	49 2 8	3166	47 35 18	3203	46 9 12	3247
	a Pegasi	E.	63 50 51	2480	62 9 9	2470	60 27 13	2460	58 45 4	2453
	a Arietis	E.	106 52 37	2339	105 7 34	2322	103 22 6	2304	101 36 13	2287
12	Jupiter	W.	69 32 33	2194	71 21 10	2180	73 10 8	2165	74 59 28	2152
	Antares	W.	55 3 37	2194	56 52 13	2178	58 41 13	2163	60 30 37	2148
	a Pegasi	E.	50 12 18	2437	48 29 36	2439	46 46 57	2445	45 4 26	2453
	a Arietis	E.	92 40 43	2208	90 52 28	2194	89 3 51	2180	87 14 54	2167
13	Jupiter	W.	84 10 58	2092	86 2 9	2082	87 53 36	2072	89 45 18	2064
	Antares	W.	69 42 55	2083	71 34 20	2072	73 26 3	2062	75 18 1	2052
	a Pegasi	E.	36 36 31	2558	34 56 38	2598	33 17 40	2649	31 39 51	2709
	a Arietis	E.	78 5 28	2111	76 14 45	2101	74 23 48	2093	72 32 38	2086
	Aldebaran	E.	111 13 55	2055	109 21 46	2044	107 29 21	2034	105 36 40	2025
	Mars	E.	112 1 49	2174	110 12 42	2163	108 23 19	2153	106 33 41	2144
14	Jupiter	W.	99 6 53	2029	100 59 42	2024	102 52 39	2020	104 45 42	2017
	Antares	W.	84 41 11	2016	86 34 20	2011	88 27 37	2007	90 21 0	2004
	a Aquilæ	W.	39 9 39	3133	40 37 8	3042	42 6 29	2962	43 37 29	2893
	a Arietis	E.	63 14 22	2061	61 22 23	2060	59 30 21	2059	57 38 18	2059
	Aldebaran	E.	96 10 7	1991	94 16 18	1986	92 22 22	1982	90 28 19	1979
	Mars	E.	97 22 17	2107	95 31 29	2101	93 40 32	2098	91 49 29	2094
15	Antares	W.	99 48 44	2001	101 42 17	2003	103 35 47	2006	105 29 13	2009
	a Aquilæ	W.	51 31 48	2649	53 9 36	2618	54 48 7	2590	56 27 16	2566
	a Arietis	E.	48 18 51	2081	46 27 22	2089	44 36 6	2100	42 45 7	2113
	Aldebaran	E.	80 57 14	1974	79 2 59	1976	77 8 47	1978	75 14 38	1981
	Mars	E.	82 33 18	2088	80 42 1	2090	78 50 46	2092	76 59 34	2094
16	a Aquilæ	W.	64 49 40	2495	66 31 0	2489	68 12 29	2485	69 54 4	2482
	Fomalhaut	W.	38 36 24	3402	39 58 38	3301	41 22 48	3216	42 48 38	3143
	a Arietis	E.	33 36 14	2216	31 48 11	2247	30 0 54	2285	28 14 32	2330
	Aldebaran	E.	65 45 36	2009	63 52 16	2017	61 59 9	2026	60 6 16	2035
	Mars	E.	67 45 7	2122	65 54 41	2130	64 4 27	2137	62 14 25	2147
	Pollux	E.	108 10 25	2099	106 19 25	2105	104 28 33	2112	102 37 52	2120
17	a Aquilæ	W.	78 21 49	2499	80 3 3	2508	81 44 5	2517	83 24 54	2529
	Fomalhaut	W.	50 16 24	2905	51 48 36	2877	53 21 24	2854	54 54 42	2835
	a Pegasi	W.	30 50 53	2738	32 26 42	2687	34 3 40	2646	35 41 33	2614
	Aldebaran	E.	50 45 50	2094	48 54 41	2107	47 3 53	2121	45 13 26	2136
	Mars	E.	53 8 7	2204	51 19 45	2216	49 31 42	2231	47 44 0	2245
	Pollux	E.	93 27 52	2172	91 38 42	2184	89 49 51	2198	88 1 20	2212
18	a Aquilæ	W.	91 44 33	2602	93 23 25	2621	95 1 52	2640	96 39 52	2660
	Fomalhaut	W.	62 45 48	2791	64 20 28	2790	65 55 9	2792	67 29 48	2795
	a Pegasi	W.	43 59 2	2538	45 39 22	2535	47 19 46	2535	49 0 11	2536
	Aldebaran	E.	36 7 9	2220	34 19 11	2239	32 31 41	2258	30 44 39	2277
	Mars	E.	38 51 4	2324	37 5 40	2343	35 20 42	2360	33 36 10	2378
	Pollux	E.	79 4 28	2294	77 18 20	2312	75 32 38	2331	73 47 23	2350
19	Fomalhaut	W.	75 21 15	2835	76 54 58	2847	78 28 25	2859	80 1 36	2873
	a Pegasi	W.	57 20 53	2570	59 0 29	2580	60 39 51	2592	62 18 57	2604
	Aldebaran	E.	21 57 12	2301	20 13 24	2419	18 30 16	2449	16 47 51	2484

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
11	Jupiter	W.	62° 21′ 50″	2255	64° 8′ 56″	2239	65° 56′ 26″	2224	67° 44′ 18″	2208
	Antares	W.	47 53 31	2265	49 40 22	2246	51 27 41	2229	53 15 26	2211
	Fomalhaut	E.	44 43 58	3299	43 19 45	3368	41 56 41	3430	40 34 58	3513
	a Pegasi	E.	57 2 45	2447	55 20 17	2441	53 37 41	2438	51 55 1	2436
	a Arietis	E.	99 49 55	2270	98 3 12	2255	96 16 6	2239	94 28 36	2223
12	Jupiter	W.	76 49 8	2139	78 39 8	2126	80 29 27	2115	82 20 4	2103
	Antares	W.	62 20 23	2134	64 10 31	2120	66 1 0	2107	67 51 48	2095
	a Pegasi	E.	43 22 6	2464	41 40 2	2480	39 58 21	2500	38 17 8	2526
	a Arietis	E.	85 25 37	2155	83 36 1	2143	81 46 7	2132	79 55 56	2120
13	Jupiter	W.	91 37 13	2055	93 29 21	2048	95 21 41	2041	97 14 12	2034
	Antares	W.	77 10 14	2043	79 2 41	2035	80 55 20	2028	82 48 10	2021
	a Pegasi	E.	30 3 23	2784	28 28 34	2878	26 55 47	2994	25 25 27	3139
	a Arietis	E.	70 41 17	2079	68 49 45	2073	66 58 4	2068	65 6 16	2064
	Aldebaran	E.	103 43 45	2017	101 50 37	2009	99 57 17	2003	98 3 47	1996
	Mars	E.	104 43 49	2135	102 53 43	2127	101 3 25	2120	99 12 56	2113
14	Jupiter	W.	106 38 50	2014	108 32 2	2013	110 25 16	2012	112 18 31	2012
	Antares	W.	92 14 28	2001	94 8 0	2000	96 1 34	2000	97 55 9	2000
	a Aquilæ	W.	45 9 58	2830	46 43 47	2775	48 18 47	2729	49 54 49	2686
	a Arietis	E.	55 46 16	2061	53 54 16	2063	52 2 20	2068	50 10 31	2073
	Aldebaran	E.	88 34 11	1976	86 39 59	1975	84 45 45	1974	82 51 30	1974
	Mars	E.	89 58 21	2092	88 7 9	2089	86 15 53	2088	84 24 36	2088
15	Antares	W.	107 22 33	2014	109 15 46	2019	111 8 50	2026	113 1 44	2033
	a Aquilæ	W.	58 6 57	2546	59 47 6	2529	61 27 39	2515	63 8 32	2504
	a Arietis	E.	40 54 27	2128	39 4 10	2145	37 14 19	2165	35 24 59	2188
	Aldebaran	E.	73 20 34	1986	71 26 37	1990	69 32 47	1996	67 39 7	2002
	Mars	E.	75 8 26	2098	73 17 24	2103	71 26 30	2109	69 35 44	2115
16	a Aquilæ	W.	71 35 42	2482	73 17 20	2485	74 58 55	2487	76 40 26	2493
	Fomalhaut	W.	44 15 56	3079	45 44 31	3025	47 14 13	2977	48 44 54	2939
	a Arietis	E.	26 29 16	2382	24 45 16	2445	23 2 46	2522	21 22 4	2616
	Aldebaran	E.	58 13 37	2046	56 21 14	2057	54 29 8	2068	52 37 19	2081
	Mars	E.	60 24 37	2157	58 35 4	2167	56 45 47	2179	54 56 48	2191
	Pollux	E.	100 47 23	2128	98 57 7	2138	97 7 6	2148	95 17 20	2160
17	a Aquilæ	W.	85 5 27	2541	86 45 43	2554	88 25 41	2569	90 5 18	2585
	Fomalhaut	W.	56 28 25	2820	58 2 27	2808	59 36 44	2800	61 11 12	2794
	a Pegasi	W.	37 20 9	2589	38 59 19	2569	40 38 56	2556	42 18 52	2545
	Aldebaran	E.	43 23 22	2151	41 33 41	2168	39 44 25	2184	37 55 34	2202
	Mars	E.	45 56 39	2260	44 9 40	2275	42 23 4	2291	40 36 52	2308
	Pollux	E.	86 13 11	2227	84 25 24	2243	82 38 1	2260	80 51 2	2277
18	a Aquilæ	W.	98 17 25	2682	99 54 29	2704	101 31 3	2727	103 7 7	2752
	Fomalhaut	W.	69 4 22	2800	70 38 50	2807	72 13 9	2815	73 47 18	2824
	a Pegasi	W.	50 40 34	2540	52 20 52	2545	54 1 3	2552	55 41 4	2561
	Aldebaran	E.	28 58 6	2298	27 12 3	2320	25 26 32	2343	23 41 35	2366
	Mars	E.	31 52 4	2397	30 8 25	2416	28 25 13	2435	26 42 28	2455
	Pollux	E.	72 2 37	2370	70 18 19	2390	68 34 30	2411	66 51 11	2432
19	Fomalhaut	W.	81 34 29	2888	83 7 3	2904	84 39 17	2920	86 11 10	2937
	a Pegasi	W.	63 57 46	2618	65 36 17	2631	67 14 30	2645	68 52 24	2660
	Aldebaran	E.	15 6 15	2524	13 25 35	2571	11 46 0	2635	10 7 53	2725

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	Mars	E.	25° 0′ 11″	2475	23° 18′ 23″	2496	21° 37′ 4″	2517	19° 56′ 14″	2538
	Pollux	E.	65 8 22	2454	63 26 4	2476	61 44 17	2498	60 3 1	2522
	Regulus	E.	101 29 1	2364	99 44 34	2382	98 0 33	2401	96 16 59	2419
	Sun	E.	130 17 49	2673	128 40 33	2692	127 3 43	2712	125 27 19	2732
20	Fomalhaut	W.	87 42 42	2955	89 13 51	2974	90 44 36	2993	92 14 57	3014
	α Pegasi	W.	70 29 58	2675	72 7 11	2690	73 44 4	2707	75 20 35	2723
	α Arietis	W.	27 0 2	2767	28 34 47	2777	30 9 45	2771	31 44 51	2768
	Pollux	E.	51 44 59	2645	50 7 5	2672	48 29 47	2699	46 53 6	2727
	Regulus	E.	87 45 51	2515	86 4 58	2533	84 24 31	2552	82 44 30	2572
	Sun	E.	117 31 55	2832	115 58 9	2852	114 24 49	2872	112 51 54	2892
21	Fomalhaut	W.	99 40 21	3120	101 8 6	3143	102 35 24	3167	104 2 13	3190
	α Pegasi	W.	83 17 48	2805	84 52 9	2822	86 26 8	2838	87 59 46	2855
	α Arietis	W.	39 40 10	2788	41 14 53	2798	42 49 24	2807	44 23 43	2816
	Pollux	E.	38 59 20	2883	37 26 40	2920	35 54 47	2959	34 23 43	3001
	Regulus	E.	74 30 52	2663	72 53 23	2681	71 16 18	2699	69 39 37	2716
	Sun	E.	105 13 39	2989	103 43 13	3009	102 13 11	3026	100 43 31	3045
22	α Pegasi	W.	95 42 33	2939	97 14 3	2955	98 45 12	2971	100 16 1	2987
	α Arietis	W.	52 11 59	2871	53 44 55	2883	55 17 36	2894	56 50 3	2906
	Aldebaran	W.	18 27 59	2834	20 1 43	2840	21 35 19	2848	23 8 44	2856
	Mars	W.	14 0 29	2930	15 32 10	2939	17 3 39	2950	18 34 54	2962
	Regulus	E.	61 41 55	2801	60 7 28	2817	58 33 22	2833	56 59 37	2848
	Sun	E.	93 20 45	3133	91 53 15	3148	90 26 4	3165	88 59 13	3181
23	α Arietis	W.	64 28 43	2961	65 59 45	2971	67 30 34	2981	69 1 11	2991
	Aldebaran	W.	30 52 39	2909	32 24 46	2920	33 56 40	2930	35 28 21	2940
	Mars	W.	26 7 26	3022	27 37 12	3033	29 6 44	3043	30 36 3	3054
	Regulus	E.	49 15 41	2921	47 43 49	2935	46 12 15	2950	44 40 59	2962
	Sun	E.	81 49 29	3253	80 24 22	3266	78 59 31	3279	77 34 55	3292
24	α Arietis	W.	76 31 15	3036	78 0 43	3045	79 30 0	3052	80 59 8	3060
	Aldebaran	W.	43 3 43	2986	44 34 13	2994	46 4 33	3001	47 34 44	3009
	Mars	W.	37 59 29	3102	39 27 36	3111	40 55 32	3119	42 23 19	3127
	Regulus	E.	37 8 44	3028	35 39 6	3041	34 9 44	3055	32 40 39	3068
	Sun	E.	70 35 21	3347	69 12 4	3357	67 48 58	3366	66 26 2	3375
25	α Arietis	W.	88 22 35	3093	89 50 53	3100	91 19 3	3105	92 47 7	3110
	Aldebaran	W.	55 3 25	3042	56 32 46	3047	58 2 1	3052	59 31 9	3057
	Mars	W.	49 40 2	3159	51 7 0	3164	52 33 52	3169	54 0 38	3173
	Regulus	E.	25 19 35	3146	23 52 21	3166	22 25 31	3188	20 59 8	3214
	Sun	E.	59 33 48	3413	58 11 46	3419	56 49 51	3425	55 28 3	3431
26	α Arietis	W.	100 6 5	3130	101 33 38	3133	103 1 7	3137	104 28 32	3139
	Aldebaran	W.	66 55 34	3074	68 24 15	3077	69 52 53	3079	71 21 28	3082
	Mars	W.	61 13 16	3191	62 39 36	3193	64 5 54	3194	65 32 10	3197
	Pollux	W.	26 32 40	3533	27 52 28	3492	29 13 1	3457	30 34 13	3426
	Sun	E.	48 40 29	3453	47 19 12	3456	45 57 59	3459	44 36 49	3462
27	Aldebaran	W.	78 43 54	3086	80 12 21	3087	81 40 47	3086	83 9 14	3086
	Mars	W.	72 43 5	3200	74 9 14	3199	75 35 24	3198	77 1 35	3198
	Pollux	W.	37 27 29	3322	38 51 15	3307	40 15 18	3294	41 39 37	3283
	Sun	E.	37 51 37	3471	36 30 40	3472	35 9 45	3473	33 48 51	3473

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
19	Mars E.	18° 15′ 54″	2561	16° 36′ 6″	2585	14° 56′ 50″	2611	13° 18′ 10″	2640
	Pollux E.	58 22 18	2545	56 42 8	2569	55 2 31	2594	53 23 28	2619
	Regulus E.	94 33 52	2438	92 51 12	2457	91 8 58	2476	89 27 11	2495
	Sun E.	123 51 21	2752	122 15 50	2772	120 40 45	2792	119 6 7	2812
20	Fomalhaut W.	93 44 53	3034	95 14 24	3055	96 43 29	3076	98 12 8	3097
	α Pegasi W.	76 56 45	2739	78 32 33	2755	80 8 0	2772	81 43 5	2788
	α Arietis W.	33 20 1	2769	34 55 10	2771	36 30 16	2775	38 5 17	2781
	Pollux E.	45 17 2	2756	43 41 36	2786	42 6 50	2817	40 32 44	2849
	Regulus E.	81 4 56	2590	79 25 47	2609	77 47 4	2627	76 8 46	2645
	Sun E.	111 19 25	2912	109 47 21	2932	108 15 43	2951	106 44 29	2970
21	Fomalhaut W.	105 28 34	3215	106 54 25	3241	108 19 46	3266	109 44 37	3294
	α Pegasi W.	89 33 2	2872	91 5 57	2889	92 38 30	2905	94 10 42	2922
	α Arietis W.	45 57 50	2827	47 31 43	2837	49 5 23	2848	50 38 48	2859
	Pollux E.	32 53 31	3045	31 24 14	3093	29 55 56	3147	28 28 43	3206
	Regulus E.	68 3 19	2735	66 27 25	2751	64 51 53	2768	63 16 43	2785
	Sun E.	99 14 14	3064	97 45 20	3081	96 16 47	3099	94 48 36	3115
22	α Pegasi W.	101 46 30	3003	103 16 39	3019	104 46 28	3035	106 15 57	3051
	α Arietis W.	58 22 16	2916	59 54 14	2928	61 25 57	2939	62 57 27	2950
	Aldebaran W.	24 41 57	2868	26 14 57	2878	27 47 44	2888	29 20 18	2898
	Mars W.	20 5 54	2974	21 36 39	2986	23 7 9	2997	24 37 25	3009
	Regulus E.	55 26 11	2863	53 53 5	2878	52 20 18	2893	50 47 50	2908
	Sun E.	87 32 41	3196	86 6 27	3210	84 40 31	3225	83 14 52	3239
23	α Arietis W.	70 31 35	3001	72 1 47	3009	73 31 48	3019	75 1 37	3028
	Aldebaran W.	36 59 49	2950	38 31 5	2959	40 2 9	2968	41 33 2	2977
	Mars W.	32 5 9	3065	33 34 2	3075	35 2 42	3084	36 31 11	3093
	Regulus E.	43 9 59	2976	41 39 16	2989	40 8 49	3001	38 38 38	3015
	Sun E.	76 10 34	3303	74 46 26	3315	73 22 32	3325	71 58 50	3337
24	α Arietis W.	82 28 6	3067	83 56 56	3074	85 25 37	3081	86 54 10	3087
	Aldebaran W.	49 4 45	3017	50 34 37	3023	52 4 21	3030	53 33 57	3036
	Mars W.	43 50 56	3134	45 18 24	3141	46 45 44	3147	48 12 57	3153
	Regulus E.	31 11 50	3082	29 43 18	3097	28 15 5	3112	26 47 10	3129
	Sun E.	65 3 17	3383	63 40 41	3392	62 18 15	3399	60 55 57	3407
25	α Arietis W.	94 15 5	3114	95 42 58	3119	97 10 45	3123	98 38 27	3126
	Aldebaran W.	61 0 11	3061	62 29 8	3065	63 58 1	3068	65 26 50	3072
	Mars W.	55 27 19	3178	56 53 55	3182	58 20 26	3185	59 46 53	3188
	Regulus E.	19 33 16	3245	18 8 0	3282	16 43 27	3328	15 19 48	3387
	Sun E.	54 6 22	3436	52 44 46	3441	51 23 16	3445	50 1 50	3449
26	α Arietis W.	105 55 54	3142	107 23 13	3145	108 50 28	3147	110 17 41	3149
	Aldebaran W.	72 50 0	3083	74 18 30	3084	75 46 59	3085	77 15 27	3086
	Mars W.	66 58 23	3198	68 24 35	3198	69 50 46	3199	71 16 56	3200
	Pollux W.	31 56 0	3400	33 18 16	3378	34 40 58	3358	36 4 3	3339
	Sun E.	43 15 42	3463	41 54 37	3466	40 33 35	3468	39 12 35	3470
27	Aldebaran W.	84 37 41	3086	86 6 9	3084	87 34 38	3082	89 3 9	3081
	Mars W.	78 27 47	3197	79 54 0	3196	81 20 15	3194	82 46 31	3192
	Pollux W.	43 4 10	3270	44 28 57	3259	45 53 56	3249	47 19 7	3240
	Sun E.	32 27 57	3474	31 7 4	3474	29 46 11	3474	28 25 18	3475

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	12 31 22.18	9.070	S. 3 23 17.1	58.26	16 1.66	64.39	10 28.91	0.786
Sun.	2	12 34 59.97	9.083	3 46 34.0	58.16	16 1.94	64.43	10 47.62	0.773
Mon.	3	12 38 38.08	9.096	4 9 48.3	58.04	16 2.22	64.48	11 6.01	0.759
Tues.	4	12 42 16.52	9.110	4 32 59.6	57.91	16 2.50	64.53	11 24.07	0.745
Wed.	5	12 45 55.29	9.125	4 56 7.6	57.76	16 2.78	64.59	11 41.80	0.730
Thur.	6	12 49 34.43	9.141	5 19 11.7	57.60	16 3.07	64.65	11 59.16	0.715
Fri.	7	12 53 13.97	9.158	5 42 11.8	57.42	16 3.36	64.71	12 16.14	0.698
Sat.	8	12 56 53.91	9.175	6 5 7.5	57.22	16 3.64	64.78	12 32.70	0.681
Sun.	9	13 0 34.28	9.193	6 27 58.2	57.01	16 3.92	64.85	12 48.83	0.663
Mon.	10	13 4 15.08	9.211	6 50 43.5	56.78	16 4.20	64.92	13 4.53	0.645
Tues.	11	13 7 56.35	9.231	7 13 23.3	56.54	16 4.49	64.99	13 19.78	0.625
Wed.	12	13 11 38.10	9.251	7 35 57.1	56.29	16 4.78	65.06	13 34.55	0.605
Thur.	13	13 15 20.35	9.273	7 58 24.6	56.02	16 5.06	65.14	13 48.82	0.583
Fri.	14	13 19 3.13	9.295	8 20 45.6	55.73	16 5.34	65.22	14 2.55	0.561
Sat.	15	13 22 46.46	9.318	8 42 59.5	55.43	16 5.61	65.30	14 15.74	0.537
Sun.	16	13 26 30.35	9.342	9 5 6.0	55.11	16 5.88	65.38	14 28.37	0.513
Mon.	17	13 30 14.83	9.368	9 27 4.7	54.78	16 6.15	65.47	14 40.40	0.488
Tues.	18	13 33 59.93	9.393	9 48 55.3	54.43	16 6.42	65.56	14 51.81	0.462
Wed.	19	13 37 45.66	9.420	10 10 37.3	54.07	16 6.69	65.65	15 2.60	0.435
Thur.	20	13 41 32.05	9.447	10 32 10.6	53.69	16 6.95	65.74	15 12.74	0.408
Fri.	21	13 45 19.10	9.476	10 53 34.5	53.29	16 7.21	65.84	15 22.22	0.380
Sat.	22	13 49 6.85	9.505	11 14 48.7	53.88	16 7.47	65.94	15 31.00	0.351
Sun.	23	13 52 55.30	9.535	11 35 52.8	52.45	16 7.73	66.04	15 39.08	0.321
Mon.	24	13 56 44.46	9.565	11 56 46.5	52.01	16 7.99	66.14	15 46.45	0.291
Tues.	25	14 0 34.36	9.596	12 17 29.3	51.55	16 8.25	66.24	15 53.09	0.261
Wed.	26	14 4 25.01	9.627	12 38 0.8	51.07	16 8.51	66.34	15 58.96	0.229
Thur.	27	14 8 16.42	9.659	12 58 20.4	50.57	16 8.76	66.45	16 4.10	0.198
Fri.	28	14 12 8.59	9.691	13 18 28.0	50.05	16 9.02	66.56	16 8.49	0.166
Sat.	29	14 16 1.53	9.723	13 38 23.0	49.51	16 9.27	66.67	16 12.09	0.133
Sun.	30	14 19 55.26	9.756	13 58 5.1	48.95	16 9.52	66.78	16 14.91	0.100
Mon.	31	14 23 49.78	9.789	14 17 33.9	48.39	16 9.77	66.89	16 16.94	0.067
Tues.	32	14 27 45.09	9.822	S. 14 36 48.9	47.81	16 10.02	67.01	16 18.17	0.034

Note. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	12 31 23.76	9.070	S. 3 23 27.3	58.26	10 29.04	0.786	12 41 52.80
Sun.	2	12 35 1.60	9.083	3 46 44.5	58.16	10 47.76	0.773	12 45 49.36
Mon.	3	12 38 39.76	9.096	4 9 59.1	58.04	11 6.15	0.759	12 49 45.91
Tues.	4	12 42 18.25	9.110	4 33 10.7	57.91	11 24.21	0.745	12 53 42.46
Wed.	5	12 45 57.07	9.125	4 56 18.9	57.76	11 41.94	0.730	12 57 39.01
Thur.	6	12 49 36.26	9.141	5 19 23.2	57.60	11 59.30	0.715	13 1 35.56
Fri.	7	12 53 15.84	9.158	5 42 23.5	57.42	12 16.28	0.698	13 5 32.12
Sat.	8	12 56 55.83	9.175	6 5 19.4	57.22	12 32.84	0.681	13 9 28.67
Sun.	9	13 0 36.25	9.193	6 28 10.3	57.01	12 48.97	0.663	13 13 25.22
Mon.	10	13 4 17.10	9.211	6 50 55.8	56.78	13 4.67	0.645	13 17 21.77
Tues.	11	13 7 58.41	9.231	7 13 35.8	56.54	13 19.92	0.625	13 21 18.33
Wed.	12	13 11 40.19	9.251	7 36 9.8	56.29	13 34.69	0.605	13 25 14.88
Thur.	13	13 15 22.48	9.273	7 58 37.5	56.02	13 48.95	0.583	13 29 11.43
Fri.	14	13 19 5.30	9.295	8 20 58.7	55.73	14 2.68	0.561	13 33 7.98
Sat.	15	13 22 48.67	9.318	8 43 12.7	55.43	14 15.87	0.537	13 37 4.54
Sun.	16	13 26 32.60	9.342	9 5 19.3	55.11	14 28.49	0.513	13 41 1.09
Mon.	17	13 30 17.12	9.368	9 27 18.1	54.78	14 40.52	0.488	13 44 57.64
Tues.	18	13 34 2.26	9.393	9 49 8.8	54.43	14 51.93	0.462	13 48 54.19
Wed.	19	13 37 48.03	9.420	10 10 50.9	54.07	15 2.72	0.435	13 52 50.75
Thur.	20	13 41 34.45	9.447	10 32 24.2	53.69	15 12.85	0.408	13 56 47.30
Fri.	21	13 45 21.53	9.476	10 53 48.1	53.29	15 22.32	0.380	14 0 43.85
Sat.	22	13 49 9.31	9.505	11 15 2.3	52.88	15 31.09	0.351	14 4 40.40
Sun.	23	13 52 57.79	9.535	11 36 6.3	52.45	15 39.17	0.321	14 8 36.96
Mon.	24	13 56 46.98	9.565	11 57 0.0	52.01	15 46.53	0.291	14 12 33.51
Tues.	25	14 0 36.91	9.596	12 17 42.8	51.55	15 53.16	0.261	14 16 30.07
Wed.	26	14 4 27.60	9.627	12 38 14.3	51.07	15 59.02	0.229	14 20 26.62
Thur.	27	14 8 19.02	9.659	12 58 33.9	50.57	16 4.15	0.198	14 24 23.17
Fri.	28	14 12 11.20	9.691	13 18 41.4	50.05	16 8.53	0.166	14 28 19.73
Sat.	29	14 16 4.16	9.723	13 38 36.3	49.51	16 12.12	0.133	14 32 16.28
Sun.	30	14 19 57.91	9.756	13 58 18.3	48.95	16 14.93	0.100	14 36 12.84
Mon.	31	14 23 52.44	9.789	14 17 47.0	48.39	16 16.95	0.067	14 40 9.39
Tues.	32	14 27 47.76	9.822	S. 14 37 1.9	47.81	16 18.18	0.034	14 44 5.94

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h m s
1	275	188 33 5.6	32 16.8	147.79	—0.18	0.0001519	52.5	11 16 16.10
2	276	189 32 13.5	31 24.7	147.87	—0.05	0.0000255	52.8	11 12 20.19
3	277	190 31 23.3	30 34.4	147.95	+0.08	9.9998987	53.0	11 8 24.28
4	278	191 30 35.0	29 46.0	148.03	0.22	.9997713	53.2	11 4 28.37
5	279	192 29 48.6	28 59.5	148.11	0.34	.9996435	53.3	11 0 32.47
6	280	193 29 4.0	28 14.8	148.18	0.44	.9995155	53.4	10 56 36.57
7	281	194 28 21.2	27 31.9	148.26	0.53	.9993872	53.4	10 52 40.66
8	282	195 27 40.2	26 50.8	148.33	0.59	.9992588	53.4	10 48 44.75
9	283	196 27 0.9	26 11.4	148.41	0.60	.9991308	53.3	10 44 48.84
10	284	197 26 23.4	25 33.8	148.48	0.59	.9990031	53.1	10 40 52.94
11	285	198 25 47.7	24 58.0	148.56	0.56	.9988758	52.9	10 36 57.04
12	286	199 25 13.8	24 24.1	148.63	0.50	.9987491	52.6	10 33 1.13
13	287	200 24 41.8	23 52.0	148.71	0.42	.9986233	52.2	10 29 5.22
14	288	201 24 11.7	23 21.8	148.79	0.33	.9984984	51.8	10 25 9.31
15	289	202 23 43.6	22 53.6	148.87	0.21	.9983745	51.4	10 21 13.41
16	290	203 23 17.5	22 27.4	148.96	+0.07	.9982516	51.0	10 17 17.51
17	291	204 22 53.5	22 3.4	149.05	—0.07	.9981297	50.5	10 13 21.60
18	292	205 22 31.6	21 41.4	149.13	0.20	.9980089	50.1	10 9 25.69
19	293	206 22 11.8	21 21.5	149.22	0.30	.9978891	49.7	10 5 29.78
20	294	207 21 54.2	21 3.8	149.31	0.39	.9977702	49.3	10 1 33.88
21	295	208 21 38.8	20 48.3	149.40	0.47	.9976523	48.9	9 57 37.98
22	296	209 21 25.7	20 35.1	149.50	0.52	.9975353	48.6	9 53 42.07
23	297	210 21 15.0	20 24.3	149.59	0.54	.9974190	48.3	9 49 46.16
24	298	211 21 6.5	20 15.7	149.69	0.52	.9973032	48.1	9 45 50.26
25	299	212 21 0.3	20 9.4	149.78	0.47	.9971880	47.9	9 41 54.34
26	300	213 20 56.2	20 5.2	149.88	0.39	.9970732	47.7	9 37 58.44
27	301	214 20 54.2	20 3.0	149.97	0.29	.9969589	47.5	9 34 2.53
28	302	215 20 54.3	20 3.0	150.05	0.19	.9968449	47.4	9 30 6.62
29	303	216 20 56.5	20 5.1	150.13	—0.06	.9967313	47.3	9 26 10.71
30	304	217 21 0.7	20 9.2	150.21	+0.08	.9966181	47.1	9 22 14.80
31	305	218 21 6.7	20 15.1	150.29	0.22	.9965053	46.9	9 18 18.90
32	306	219 21 14.6	20 22.8	150.36	+0.36	9.9963930	46.7	9 14 22.99

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 52.8	14 55.4	54 30.1	+0.72	54 39.3	+0.81	0 8.9	1.82	0.6
2	14 58.2	15 1.2	54 49.6	0.90	55 0.9	0.98	0 53.4	1.89	1.6
3	15 4.5	15 8.2	55 13.2	1.07	55 26.6	1.16	1 39.8	1.98	2.6
4	15 12.2	15 16.4	55 41.0	1.24	55 56.4	1.33	2 28.3	2.07	3.6
5	15 20.9	15 25.6	56 12.9	1.41	56 30.3	1.49	3 19.1	2.15	4.6
6	15 30.6	15 35.9	56 48.8	1.58	57 8.3	1.66	4 11.7	2.22	5.6
7	15 41.5	15 47.2	57 28.6	1.72	57 49.6	1.77	5 5.8	2.27	6.6
8	15 53.0	15 58.9	58 11.1	1.80	58 32.8	1.81	6 0.6	2.29	7.6
9	16 4.8	16 10.6	58 54.5	1.78	59 15.7	1.72	6 55.5	2.28	8.6
10	16 16.1	16 21.2	59 35.9	1.63	59 54.8	1.48	7 50.1	2.27	9.6
11	16 25.8	16 29.7	60 11.6	1.30	60 25.9	1.06	8 44.4	2.26	10.6
12	16 32.8	16 34.9	60 37.1	0.79	60 45.0	+0.48	9 38.6	2.26	11.6
13	16 35.9	16 35.8	60 48.8	+0.15	60 48.6	−0.19	10 33.1	2.28	12.6
14	16 34.6	16 32.3	60 44.1	−0.55	60 35.4	0.89	11 28.2	2.32	13.6
15	16 28.8	16 24.3	60 22.7	1.22	60 6.2	1.52	12 24.2	2.34	14.6
16	16 18.9	16 12.7	59 46.2	1.78	59 23.5	1.98	13 20.8	2.36	15.6
17	16 5.9	15 58.7	58 58.6	2.14	58 32.1	2.24	14 17.3	2.33	16.6
18	15 51.3	15 43.7	58 4.8	2.29	57 37.1	2.29	15 12.8	2.27	17.6
19	15 36.3	15 29.1	57 9.7	2.24	56 43.2	2.16	16 6.4	2.18	18.6
20	15 22.2	15 15.8	56 18.0	2.03	55 54.4	1.88	16 57.6	2.08	19.6
21	15 9.9	15 4.6	55 32.8	1.71	55 13.4	1.52	17 46.1	1.97	20.6
22	15 0.0	14 56.0	54 56.3	1.32	54 41.7	1.11	18 32.1	1.88	21.6
23	14 52.7	14 50.1	54 29.6	0.90	54 20.0	0.69	19 16.2	1.81	22.6
24	14 48.2	14 46.9	54 13.0	0.48	54 8.4	−0.28	19 58.8	1.76	23.6
25	14 46.3	14 46.3	54 6.2	−0.09	54 6.3	+0.09	20 40.7	1.75	24.6
26	14 46.9	14 48.1	54 8.5	+0.26	54 12.7	0.42	21 22.8	1.77	25.6
27	14 49.7	14 51.8	54 18.7	0.56	54 26.2	0.69	22 5.7	1.81	26.6
28	14 54.2	14 57.0	54 35.2	0.80	54 45.4	0.90	22 49.9	1.88	27.6
29	15 0.1	15 3.4	54 56.8	0.98	55 9.0	1.04	23 36.1	1.97	28.6
30	15 6.9	15 10.6	55 21.9	1.10	55 35.4	1.14	δ		29.6
31	15 14.4	15 18.3	55 49.3	1.17	56 3.5	1.19	0 24.6	2.07	0.9
32	15 22.2	15 26.2	56 18.0	+1.21	56 32.6	+1.22	1 15.4	2.17	1.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 50 31.41	1.9309	S. 7 47 56.2	9.405
1	12 52 27.33	1.9332	7 57 19.7	9.376
2	12 54 23.40	1.9355	8 6 41.3	9.345
3	12 56 19.59	1.9378	8 16 1.1	9.314
4	12 58 15.92	1.9402	8 25 19.1	9.283
5	13 0 12.40	1.9427	8 34 35.1	9.251
6	13 2 9.04	1.9452	8 43 49.2	9.218
7	13 4 5.82	1.9477	8 53 1.3	9.185
8	13 6 2.75	1.9502	9 2 11.3	9.151
9	13 7 59.83	1.9527	9 11 19.3	9.117
10	13 9 57.06	1.9552	9 20 25.3	9.082
11	13 11 54.45	1.9578	9 29 29.0	9.045
12	13 13 52.01	1.9605	9 38 30.4	9.007
13	13 15 49.72	1.9632	9 47 29.6	8.967
14	13 17 47.59	1.9659	9 56 26.4	8.928
15	13 19 45.61	1.9686	10 5 20.9	8.889
16	13 21 43.80	1.9713	10 14 13.1	8.850
17	13 23 42.16	1.9741	10 23 2.8	8.809
18	13 25 40.68	1.9769	10 31 50.0	8.767
19	13 27 39.37	1.9797	10 40 34.8	8.725
20	13 29 38.24	1.9826	10 49 17.0	8.682
21	13 31 37.30	1.9855	10 57 56.5	8.638
22	13 33 36.52	1.9885	11 6 33.5	8.593
23	13 35 35.92	1.9915	S. 11 15 7.7	8.547

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 37 35.51	1.9945	S. 11 23 39.2	8.501
1	13 39 35.27	1.9975	11 32 7.9	8.455
2	13 41 35.21	2.0005	11 40 33.7	8.408
3	13 43 35.32	2.0035	11 48 56.6	8.360
4	13 45 35.61	2.0065	11 57 16.8	8.312
5	13 47 36.09	2.0095	12 5 33.9	8.262
6	13 49 36.77	2.0125	12 13 47.9	8.210
7	13 51 37.62	2.0156	12 21 59.0	8.158
8	13 53 38.66	2.0188	12 30 6.9	8.106
9	13 55 39.90	2.0220	12 38 11.6	8.054
10	13 57 41.32	2.0252	12 46 13.3	8.002
11	13 59 42.93	2.0285	12 54 11.7	7.948
12	14 1 44.74	2.0318	13 2 6.8	7.893
13	14 3 46.74	2.0352	13 9 58.6	7.835
14	14 5 48.94	2.0385	13 17 47.0	7.778
15	14 7 51.33	2.0418	13 25 31.9	7.720
16	14 9 53.93	2.0452	13 33 13.5	7.663
17	14 11 56.73	2.0485	13 40 51.5	7.604
18	14 13 59.72	2.0518	13 48 26.0	7.545
19	14 16 2.92	2.0552	13 55 56.9	7.485
20	14 18 6.32	2.0585	14 3 24.1	7.424
21	14 20 9.92	2.0618	14 10 47.7	7.363
22	14 22 13.73	2.0652	14 18 7.7	7.302
23	14 24 17.74	2.0685	14 25 23.8	7.241
24	14 26 21.95	2.0717	S. 14 32 35.9	7.174

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	14 26 21.95	2.0717	S. 14 32 35.9	7.174
1	14 28 26.36	2.0752	14 39 44.3	7.107
2	14 30 30.98	2.0787	14 46 48.7	7.043
3	14 32 35.82	2.0822	14 53 49.2	6.978
4	14 34 40.86	2.0857	15 0 45.8	6.910
5	14 36 46.11	2.0892	15 7 38.3	6.840
6	14 38 51.57	2.0927	15 14 26.6	6.772
7	14 40 57.24	2.0962	15 21 10.9	6.703
8	14 43 3.12	2.0997	15 27 51.0	6.633
9	14 45 9.21	2.1032	15 34 26.8	6.563
10	14 47 15.51	2.1067	15 40 58.5	6.492
11	14 49 22.02	2.1102	15 47 25.8	6.420
12	14 51 28.74	2.1137	15 53 48.8	6.347
13	14 53 35.67	2.1172	16 0 7.4	6.273
14	14 55 42.81	2.1207	16 6 21.5	6.198
15	14 57 50.17	2.1242	16 12 31.0	6.123
16	14 59 57.74	2.1278	16 18 36.1	6.047
17	15 2 5.52	2.1313	16 24 36.6	5.970
18	15 4 13.52	2.1348	16 30 32.4	5.893
19	15 6 21.73	2.1384	16 36 23.7	5.815
20	15 8 30.15	2.1419	16 42 10.2	5.736
21	15 10 38.78	2.1454	16 47 51.9	5.657
22	15 12 47.62	2.1490	16 53 28.9	5.577
23	15 14 56.67	2.1526	S. 16 59 1.0	5.496

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 17 5.92	2.1560	S. 17 4 28.3	5.414
1	15 19 15.39	2.1595	17 9 50.6	5.330
2	15 21 25.07	2.1630	17 15 7.9	5.247
3	15 23 34.96	2.1665	17 20 20.3	5.164
4	15 25 45.06	2.1700	17 25 27.7	5.080
5	15 27 55.37	2.1735	17 30 29.9	4.996
6	15 30 5.88	2.1769	17 35 26.9	4.909
7	15 32 16.60	2.1803	17 40 18.9	4.823
8	15 34 27.53	2.1838	17 45 5.6	4.735
9	15 36 38.67	2.1873	17 49 46.9	4.647
10	15 38 50.02	2.1908	17 54 23.1	4.558
11	15 41 1.57	2.1942	17 58 53.9	4.469
12	15 43 13.32	2.1976	18 3 19.4	4.380
13	15 45 25.27	2.2009	18 7 39.5	4.290
14	15 47 37.42	2.2043	18 11 54.1	4.198
15	15 49 49.78	2.2077	18 16 3.2	4.106
16	15 52 2.34	2.2110	18 20 6.8	4.013
17	15 54 15.10	2.2143	18 24 4.8	3.920
18	15 56 28.05	2.2175	18 27 57.2	3.827
19	15 58 41.20	2.2207	18 31 44.1	3.733
20	16 0 54.54	2.2239	18 35 25.2	3.638
21	16 3 8.07	2.2271	18 39 0.5	3.542
22	16 5 21.80	2.2303	18 42 30.1	3.445
23	16 7 35.72	2.2335	18 45 53.8	3.348
24	16 9 49.82	2.2367	S. 18 49 11.7	3.251

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	16 9 49.82	2.2367	S. 18 49 11.7	3.251
1	16 12 4.12	2.2398	18 52 23.9	3.153
2	16 14 16.60	2.2429	18 55 30.1	3.054
3	16 16 33.25	2.2460	18 58 30.2	2.956
4	16 18 48.10	2.2490	19 1 24.6	2.857
5	16 21 3.13	2.2520	19 4 12.9	2.757
6	16 23 18.35	2.2550	19 6 55.2	2.656
7	16 25 33.74	2.2580	19 9 31.6	2.555
8	16 27 49.31	2.2610	19 12 1.8	2.453
9	16 30 5.06	2.2639	19 14 25.7	2.350
10	16 32 20.99	2.2668	19 16 43.7	2.247
11	16 34 37.09	2.2696	19 18 55.4	2.143
12	16 36 53.36	2.2724	19 21 0.8	2.039
13	16 39 9.79	2.2752	19 23 0.0	1.935
14	16 41 26.38	2.2779	19 24 52.9	1.830
15	16 43 43.13	2.2806	19 26 39.6	1.724
16	16 46 0.06	2.2833	19 28 19.9	1.618
17	16 48 17.14	2.2859	19 29 53.8	1.512
18	16 50 34.36	2.2885	19 31 21.4	1.406
19	16 52 51.75	2.2910	19 32 42.6	1.300
20	16 55 9.29	2.2936	19 33 57.3	1.192
21	16 57 26.98	2.2962	19 35 5.5	1.084
22	16 59 44.83	2.2987	19 36 7.3	0.975
23	17 2 2.82	2.3012	S. 19 37 2.5	0.866

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 4 20.95	2.3038	S. 19 37 51.2	0.757
1	17 6 39.25	2.3060	19 38 33.4	0.648
2	17 8 57.68	2.3082	19 39 9.0	0.538
3	17 11 16.23	2.3104	19 39 37.9	0.428
4	17 13 34.92	2.3125	19 40 0.3	0.318
5	17 15 53.73	2.3145	19 40 16.0	0.207
6	17 18 12.66	2.3165	19 40 25.0	0.096
7	17 20 31.72	2.3185	19 40 27.3	0.017
8	17 22 50.89	2.3205	19 40 22.9	0.129
9	17 25 10.18	2.3224	19 40 11.9	0.241
10	17 27 29.59	2.3243	19 39 54.1	0.353
11	17 29 49.11	2.3263	19 39 29.5	0.466
12	17 32 8.74	2.3282	19 38 58.2	0.579
13	17 34 28.50	2.3300	19 38 20.1	0.692
14	17 36 48.36	2.3318	19 37 35.2	0.805
15	17 39 8.33	2.3336	19 36 43.6	0.918
16	17 41 28.40	2.3353	19 35 45.2	1.030
17	17 43 48.57	2.3370	19 34 39.9	1.144
18	17 46 8.84	2.3386	19 33 27.6	1.258
19	17 48 29.21	2.3402	19 32 8.6	1.373
20	17 50 49.68	2.3418	19 30 42.7	1.487
21	17 53 10.25	2.3434	19 29 9.9	1.602
22	17 55 30.91	2.3450	19 27 30.3	1.717
23	17 57 51.65	2.3463	19 25 43.8	1.832
24	18 0 12.47	2.3475	S. 19 23 50.3	1.947

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	18 0 12.47	2.3475	S. 19 23 50.3	1.947
1	18 2 33.36	2.3488	19 21 50.0	2.062
2	18 4 54.32	2.3501	19 19 42.8	2.177
3	18 7 15.36	2.3513	19 17 28.8	2.292
4	18 9 36.48	2.3525	19 15 7.8	2.407
5	18 11 57.66	2.3536	19 12 39.9	2.522
6	18 14 18.91	2.3547	19 10 5.0	2.637
7	18 16 40.23	2.3558	19 7 23.2	2.753
8	18 19 1.61	2.3568	19 4 34.5	2.868
9	18 21 23.04	2.3578	19 1 39.0	2.983
10	18 23 44.54	2.3587	18 58 36.5	3.098
11	18 26 6.09	2.3596	18 55 27.1	3.213
12	18 28 27.68	2.3604	18 52 10.8	3.328
13	18 30 49.33	2.3612	18 48 47.6	3.443
14	18 33 11.02	2.3619	18 45 17.5	3.558
15	18 35 32.74	2.3626	18 41 40.6	3.673
16	18 37 54.52	2.3632	18 37 56.7	3.788
17	18 40 16.33	2.3638	18 34 6.0	3.902
18	18 42 38.17	2.3643	18 30 8.5	4.016
19	18 45 0.05	2.3648	18 26 4.1	4.130
20	18 47 21.96	2.3654	18 21 52.9	4.244
21	18 49 43.90	2.3660	18 17 34.8	4.358
22	18 52 5.88	2.3665	18 13 9.8	4.472
23	18 54 27.88	2.3668	S. 18 8 38.1	4.585

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 56 49.89	2.3671	S. 18 3 59.7	4.698
1	18 59 11.93	2.3674	17 59 14.4	4.810
2	19 1 33.98	2.3676	17 54 22.4	4.923
3	19 3 56.03	2.3678	17 49 23.8	5.035
4	19 6 18.11	2.3680	17 44 18.3	5.147
5	19 8 40.20	2.3682	17 39 6.1	5.259
6	19 11 2.29	2.3684	17 33 47.3	5.371
7	19 13 24.40	2.3685	17 28 21.7	5.482
8	19 15 46.51	2.3685	17 22 49.5	5.593
9	19 18 8.63	2.3685	17 17 10.9	5.703
10	19 20 30.74	2.3685	17 11 25.3	5.913
11	19 22 52.85	2.3684	17 5 33.2	5.922
12	19 25 14.97	2.3684	16 59 34.4	6.030
13	19 27 37.08	2.3683	16 53 29.3	6.138
14	19 29 59.18	2.3682	16 47 17.7	6.247
15	19 32 21.27	2.3681	16 40 59.6	6.355
16	19 34 43.36	2.3680	16 34 35.0	6.463
17	19 37 5.43	2.3679	16 28 4.0	6.570
18	19 39 27.49	2.3676	16 21 26.6	6.676
19	19 41 49.54	2.3673	16 14 42.8	6.782
20	19 44 11.57	2.3671	16 7 52.7	6.888
21	19 46 33.58	2.3668	16 0 56.3	6.993
22	19 48 55.58	2.3666	15 53 53.4	7.098
23	19 51 17.57	2.3663	15 46 44.4	7.202
24	19 53 39.54	2.3659	S. 15 39 29.4	7.305

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 53 39.54	2.3659	S. 15 39 29.4	7.306
1	19 56 1.48	2.3655	15 32 8.0	7.407
2	19 58 23.40	2.3651	15 24 40.6	7.508
3	20 0 45.30	2.3648	15 17 7.3	7.608
4	20 3 7.18	2.3644	15 9 27.7	7.708
5	20 5 29.03	2.3639	15 1 42.2	7.808
6	20 7 50.84	2.3634	14 53 50.7	7.908
7	20 10 12.63	2.3630	14 45 53.2	8.007
8	20 12 34.39	2.3626	14 37 50.0	8.106
9	20 14 56.11	2.3621	14 29 40.7	8.204
10	20 17 17.82	2.3616	14 21 25.4	8.302
11	20 19 39.50	2.3611	14 13 4.5	8.395
12	20 22 1.14	2.3606	14 4 38.0	8.489
13	20 24 22.75	2.3600	13 56 5.7	8.583
14	20 26 44.33	2.3595	13 47 27.9	8.676
15	20 29 5.89	2.3589	13 38 44.7	8.769
16	20 31 27.40	2.3583	13 29 55.7	8.862
17	20 33 48.88	2.3578	13 21 1.3	8.953
18	20 36 10.34	2.3573	13 12 1.6	9.043
19	20 38 31.76	2.3567	13 2 56.3	9.132
20	20 40 53.15	2.3562	12 53 45.8	9.221
21	20 43 14.50	2.3556	12 44 30.0	9.309
22	20 45 35.81	2.3550	12 35 8.9	9.397
23	20 47 57.09	2.3544	S. 12 25 42.6	9.483

MONDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 50 18.35	2.3538	S. 12 16 11.1	9.567
1	20 52 39.57	2.3533	12 6 34.5	9.650
2	20 55 0.76	2.3527	11 56 53.1	9.732
3	20 57 21.91	2.3522	11 47 6.8	9.814
4	20 59 43.02	2.3517	11 37 15.6	9.895
5	21 2 4.10	2.3511	11 27 19.5	9.975
6	21 4 25.15	2.3505	11 17 18.7	10.054
7	21 6 46.16	2.3500	11 7 12.9	10.133
8	21 9 7.14	2.3495	10 57 2.6	10.211
9	21 11 28.10	2.3490	10 46 47.7	10.288
10	21 13 49.02	2.3485	10 36 27.9	10.365
11	21 16 9.91	2.3480	10 26 3.8	10.439
12	21 18 30.77	2.3475	10 15 35.4	10.511
13	21 20 51.60	2.3470	10 5 2.5	10.582
14	21 23 12.40	2.3465	9 54 25.5	10.652
15	21 25 33.18	2.3460	9 43 44.4	10.721
16	21 27 53.92	2.3455	9 32 59.0	10.790
17	21 30 14.64	2.3450	9 22 9.6	10.858
18	21 32 35.33	2.3446	9 11 16.1	10.925
19	21 34 55.99	2.3442	9 0 18.5	10.992
20	21 37 16.63	2.3438	8 49 17.1	11.056
21	21 39 37.26	2.3434	8 38 12.0	11.119
22	21 41 57.85	2.3430	8 27 2.8	11.182
23	21 44 18.42	2.3427	8 15 50.1	11.241
24	21 46 38.96	2.3424	S. 8 4 34.0	11.299

TUESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 46 38.96	2.3424	S. 8 4 34.0	11.299
1	21 48 59.50	2.3421	7 53 14.2	11.357
2	21 51 20.02	2.3418	7 41 51.1	11.413
3	21 53 40.51	2.3415	7 30 24.8	11.468
4	21 56 0.99	2.3413	7 18 54.9	11.523
5	21 58 21.46	2.3411	7 7 21.9	11.576
6	22 0 41.92	2.3409	6 55 45.8	11.629
7	22 3 2.36	2.3407	6 44 6.3	11.682
8	22 5 22.79	2.3405	6 32 23.9	11.732
9	22 7 43.21	2.3403	6 20 38.7	11.781
10	22 10 3.62	2.3402	6 8 50.3	11.828
11	22 12 24.03	2.3402	5 56 59.3	11.873
12	22 14 44.43	2.3400	5 45 5.7	11.916
13	22 17 4.83	2.3400	5 33 9.4	11.958
14	22 19 25.23	2.3399	5 21 10.7	11.999
15	22 21 45.62	2.3399	5 9 9.7	12.039
16	22 24 6.01	2.3398	4 57 6.1	12.078
17	22 26 26.40	2.3398	4 45 0.3	12.115
18	22 28 46.80	2.3398	4 32 52.4	12.151
19	22 31 7.19	2.3398	4 20 42.1	12.187
20	22 33 27.59	2.3399	4 8 29.9	12.221
21	22 35 48.00	2.3401	3 56 15.6	12.254
22	22 38 8.43	2.3403	3 43 59.5	12.286
23	22 40 28.86	2.3405	S. 3 31 41.6	12.318

WEDNESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 42 49.30	2.3407	S. 3 19 22.2	12.339
1	22 45 9.75	2.3410	3 7 1.1	12.363
2	22 47 30.22	2.3413	2 54 38.6	12.387
3	22 49 50.72	2.3416	2 42 14.6	12.411
4	22 52 11.23	2.3420	2 29 49.0	12.435
5	22 54 31.76	2.3423	2 17 22.3	12.457
6	22 56 52.30	2.3426	2 4 54.4	12.477
7	22 59 12.86	2.3429	1 52 25.1	12.496
8	23 1 33.45	2.3433	1 39 55.0	12.511
9	23 3 54.07	2.3438	1 27 24.0	12.525
10	23 6 14.72	2.3443	1 14 52.1	12.538
11	23 8 35.40	2.3448	1 2 19.5	12.549
12	23 10 56.10	2.3453	0 49 46.5	12.558
13	23 13 16.83	2.3458	0 37 12.7	12.565
14	23 15 37.60	2.3464	0 24 38.6	12.572
15	23 17 58.42	2.3470	S. 0 12 4.1	12.578
16	23 20 19.26	2.3477	N. 0 0 30.9	12.583
17	23 22 40.14	2.3483	0 13 5.9	12.586
18	23 25 1.07	2.3490	0 25 41.0	12.588
19	23 27 22.03	2.3497	0 38 16.4	12.588
20	23 29 43.04	2.3504	0 50 51.5	12.586
21	23 32 4.10	2.3512	1 3 26.5	12.582
22	23 34 25.20	2.3520	1 16 1.2	12.577
23	23 36 46.35	2.3528	1 28 35.5	12.570
24	23 39 7.56	2.3537	N. 1 41 9.2	12.560

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 13.					SATURDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 39 7.56	2.3537	N. 1 41 9.2	12.560	0	1 33 23.01	2.4100	N.11 5 31.7	10.391
1	23 41 28.82	2.3547	1 53 42.6	12.550	1	1 35 47.65	2.4112	11 15 52.8	10.310
2	23 43 50.13	2.3555	2 6 15.2	12.539	2	1 38 12.36	2.4124	11 26 8.9	10.229
3	23 46 11.48	2.3564	2 18 47.0	12.527	3	1 40 37.14	2.4136	11 36 20.0	10.146
4	23 48 32.89	2.3573	2 31 18.3	12.513	4	1 43 1.99	2.4148	11 46 26.4	10.063
5	23 50 54.36	2.3582	2 43 48.5	12.497	5	1 45 26.91	2.4160	11 56 27.6	9.979
6	23 53 15.88	2.3592	2 56 17.6	12.479	6	1 47 51.91	2.4171	12 6 23.7	9.894
7	23 55 37.46	2.3602	3 8 45.9	12.460	7	1 50 16.97	2.4182	12 16 14.8	9.808
8	23 57 59.10	2.3611	3 21 12.8	12.439	8	1 52 42.09	2.4192	12 26 0.6	9.720
9	0 0 20.80	2.3620	3 33 38.4	12.417	9	1 55 7.28	2.4202	12 35 41.1	9.631
10	0 2 42.55	2.3630	3 46 2.9	12.395	10	1 57 32.52	2.4212	12 45 16.4	9.542
11	0 5 4.37	2.3641	3 58 25.7	12.369	11	1 59 57.82	2.4222	12 54 46.1	9.451
12	0 7 26.27	2.3652	4 10 46.7	12.341	12	2 2 23.19	2.4231	13 4 10.3	9.358
13	0 9 48.22	2.3663	4 23 6.3	12.312	13	2 4 48.61	2.4240	13 13 29.0	9.263
14	0 12 10.24	2.3674	4 35 24.0	12.281	14	2 7 14.08	2.4249	13 22 41.9	9.168
15	0 14 32.33	2.3686	4 47 39.8	12.250	15	2 9 39.60	2.4258	13 31 48.9	9.073
16	0 16 54.49	2.3698	4 59 54.0	12.218	16	2 12 5.18	2.4267	13 40 50.4	8.977
17	0 19 16.72	2.3709	5 12 6.0	12.184	17	2 14 30.81	2.4276	13 49 46.0	8.880
18	0 21 39.01	2.3721	5 24 15.9	12.149	18	2 16 56.50	2.4284	13 58 35.6	8.782
19	0 24 1.38	2.3733	5 36 23.8	12.113	19	2 19 22.23	2.4292	14 7 19.5	8.682
20	0 26 23.82	2.3745	5 48 29.3	12.075	20	2 21 48.00	2.4299	14 15 57.3	8.582
21	0 28 46.33	2.3757	6 0 32.4	12.035	21	2 24 13.82	2.4306	14 24 29.0	8.481
22	0 31 8.91	2.3770	6 12 33.1	11.992	22	2 26 39.68	2.4312	14 32 54.9	8.380
23	0 33 31.57	2.3783	N. 6 24 31.2	11.948	23	2 29 5.57	2.4318	N.14 41 14.5	8.278
	FRIDAY 14.					SUNDAY 16.			
0	0 35 54.31	2.3795	N. 6 36 26.4	11.902	0	2 31 31.49	2.4324	N.14 49 27.7	8.174
1	0 38 17.12	2.3808	6 48 19.1	11.853	1	2 33 57.46	2.4330	14 57 34.9	8.067
2	0 40 40.01	2.3820	7 0 8.8	11.803	2	2 36 23.45	2.4334	15 5 35.6	7.960
3	0 43 2.97	2.3832	7 11 55.5	11.752	3	2 38 49.45	2.4338	15 13 29.8	7.851
4	0 45 26.00	2.3845	7 23 39.4	11.700	4	2 41 15.49	2.4342	15 21 17.6	7.743
5	0 47 49.11	2.3858	7 35 20.1	11.649	5	2 43 41.55	2.4345	15 28 58.9	7.635
6	0 50 12.31	2.3871	7 46 57.5	11.597	6	2 46 7.63	2.4348	15 36 33.8	7.527
7	0 52 35.58	2.3884	7 58 31.9	11.545	7	2 48 33.73	2.4350	15 44 2.2	7.418
8	0 54 58.93	2.3897	8 10 2.8	11.490	8	2 50 59.84	2.4352	15 51 24.0	7.310
9	0 57 22.36	2.3910	8 21 30.3	11.433	9	2 53 25.96	2.4354	15 58 39.2	7.201
10	0 59 45.86	2.3923	8 32 54.5	11.372	10	2 55 52.10	2.4356	16 5 47.9	7.092
11	1 2 9.44	2.3936	8 44 14.9	11.309	11	2 58 18.24	2.4357	16 12 49.9	6.981
12	1 4 33.11	2.3949	8 55 31.4	11.245	12	3 0 44.37	2.4357	16 19 45.5	6.868
13	1 6 56.85	2.3963	9 6 44.2	11.180	13	3 3 10.51	2.4357	16 26 34.0	6.752
14	1 9 20.67	2.3976	9 17 53.0	11.115	14	3 5 36.64	2.4356	16 33 15.6	6.637
15	1 11 44.56	2.3989	9 28 57.9	11.049	15	3 8 2.77	2.4355	16 39 50.3	6.522
16	1 14 8.53	2.4002	9 39 59.0	10.983	16	3 10 28.90	2.4353	16 46 18.1	6.407
17	1 16 32.58	2.4015	9 50 55.8	10.914	17	3 12 55.01	2.4351	16 52 39.0	6.291
18	1 18 56.70	2.4028	10 1 48.3	10.844	18	3 15 21.09	2.4348	16 58 52.9	6.175
19	1 21 20.90	2.4040	10 12 36.8	10.772	19	3 17 47.17	2.4345	17 4 59.9	6.058
20	1 23 45.18	2.4052	10 23 20.8	10.699	20	3 20 13.22	2.4341	17 10 59.9	5.941
21	1 26 9.53	2.4064	10 34 0.3	10.624	21	3 22 39.24	2.4336	17 16 53.0	5.823
22	1 28 33.95	2.4075	10 44 35.6	10.548	22	3 25 5.24	2.4330	17 22 38.9	5.705
23	1 30 58.44	2.4087	10 55 6.1	10.471	23	3 27 31.20	2.4324	17 28 17.7	5.587
24	1 33 23.01	2.4100	N.11 5 31.7	10.391	24	3 29 57.13	2.4318	N.17 33 49.5	5.468

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 17.					WEDNESDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 29 57.13	2.4318	N.17 33 49.5	5.468	0	5 24 49.26	2.3326	N.19 38 17.4	0.231
1	3 32 23.02	2.4312	17 39 14.0	5.350	1	5 27 9.12	2.3293	19 38 0.1	0.343
2	3 34 48.86	2.4304	17 44 31.4	5.231	2	5 29 28.77	2.3259	19 37 36.1	0.455
3	3 37 14.65	2.4296	17 49 41.8	5.112	3	5 31 48.22	2.3224	19 37 5.5	0.567
4	3 39 40.40	2.4287	17 54 45.0	4.993	4	5 34 7.46	2.3188	19 36 28.1	0.678
5	3 42 6.09	2.4278	17 59 41.0	4.874	5	5 36 26.48	2.3153	19 35 44.1	0.788
6	3 44 31.72	2.4268	18 4 29.9	4.755	6	5 38 45.29	2.3118	19 34 53.4	0.898
7	3 46 57.30	2.4258	18 9 11.6	4.635	7	5 41 3.89	2.3082	19 33 56.2	1.007
8	3 49 22.81	2.4247	18 13 46.1	4.516	8	5 43 22.27	2.3046	19 32 52.5	1.116
9	3 51 48.26	2.4235	18 18 13.3	4.397	9	5 45 40.42	2.3009	19 31 42.2	1.224
10	3 54 13.63	2.4222	18 22 33.5	4.277	10	5 47 58.36	2.2972	19 30 25.5	1.332
11	3 56 38.92	2.4209	18 26 46.4	4.157	11	5 50 16.07	2.2934	19 29 2.4	1.439
12	3 59 4.13	2.4195	18 30 51.9	4.036	12	5 52 33.54	2.2896	19 27 33.0	1.545
13	4 1 29.26	2.4181	18 34 50.2	3.912	13	5 54 50.80	2.2858	19 25 57.1	1.650
14	4 3 54.30	2.4166	18 38 41.2	3.790	14	5 57 7.83	2.2820	19 24 15.0	1.755
15	4 6 19.26	2.4151	18 42 24.8	3.669	15	5 59 24.62	2.2781	19 22 26.7	1.859
16	4 8 44.12	2.4135	18 46 1.3	3.548	16	6 1 41.19	2.2742	19 20 32.0	1.962
17	4 11 8.88	2.4119	18 49 30.5	3.427	17	6 3 57.52	2.2703	19 18 31.2	2.065
18	4 13 33.54	2.4102	18 52 52.3	3.306	18	6 6 13.61	2.2663	19 16 24.3	2.168
19	4 15 58.10	2.4085	18 56 7.0	3.185	19	6 8 29.47	2.2623	19 14 11.1	2.270
20	4 18 22.55	2.4066	18 59 14.4	3.064	20	6 10 45.09	2.2583	19 11 51.9	2.371
21	4 20 46.90	2.4047	19 2 14.5	2.943	21	6 13 0.46	2.2543	19 9 26.8	2.471
22	4 23 11.12	2.4027	19 5 7.4	2.822	22	6 15 15.60	2.2503	19 6 55.5	2.570
23	4 25 35.22	2.4007	N.19 7 53.1	2.701	23	6 17 30.49	2.2462	N.19 4 18.4	2.668
	TUESDAY 18.					THURSDAY 20.			
0	4 27 59.21	2.3987	N.19 10 31.5	2.580	0	6 19 45.14	2.2421	N.19 1 35.4	2.765
1	4 30 23.08	2.3967	19 13 2.7	2.460	1	6 21 59.54	2.2380	18 58 46.6	2.862
2	4 32 46.81	2.3945	19 15 26.7	2.339	2	6 24 13.69	2.2339	18 55 52.0	2.959
3	4 35 10.39	2.3922	19 17 43.5	2.218	3	6 26 27.60	2.2298	18 52 51.5	3.056
4	4 37 33.84	2.3898	19 19 53.0	2.098	4	6 28 41.26	2.2257	18 49 45.2	3.153
5	4 39 57.15	2.3874	19 21 55.3	1.978	5	6 30 54.67	2.2216	18 46 33.2	3.248
6	4 42 20.33	2.3850	19 23 50.4	1.859	6	6 33 7.82	2.2174	18 43 15.5	3.343
7	4 44 43.37	2.3826	19 25 38.3	1.740	7	6 35 20.73	2.2132	18 39 52.0	3.436
8	4 47 6.25	2.3801	19 27 19.1	1.622	8	6 37 33.39	2.2091	18 36 23.0	3.530
9	4 49 28.97	2.3775	19 28 52.9	1.504	9	6 39 45.81	2.2049	18 32 48.5	3.621
10	4 51 51.54	2.3747	19 30 19.6	1.387	10	6 41 57.97	2.2007	18 29 8.4	3.712
11	4 54 13.94	2.3719	19 31 39.2	1.269	11	6 44 9.88	2.1965	18 25 23.0	3.803
12	4 56 36.18	2.3691	19 32 51.6	1.150	12	6 46 21.55	2.1923	18 21 32.2	3.892
13	4 58 58.25	2.3663	19 33 57.0	1.032	13	6 48 32.95	2.1880	18 17 35.9	3.982
14	5 1 20.15	2.3635	19 34 55.4	0.914	14	6 50 44.10	2.1838	18 13 34.4	4.070
15	5 3 41.89	2.3607	19 35 46.8	0.797	15	6 52 55.01	2.1796	18 9 27.8	4.157
16	5 6 3.45	2.3578	19 36 31.0	0.680	16	6 55 5.66	2.1753	18 5 15.7	4.243
17	5 8 24.83	2.3548	19 37 8.3	0.564	17	6 57 16.05	2.1710	18 0 58.5	4.329
18	5 10 46.03	2.3518	19 37 38.8	0.448	18	6 59 26.18	2.1668	17 56 36.2	4.415
19	5 13 7.05	2.3488	19 38 2.2	0.333	19	7 1 36.06	2.1626	17 52 8.7	4.500
20	5 15 27.88	2.3457	19 38 18.8	0.219	20	7 3 45.68	2.1583	17 47 36.2	4.584
21	5 17 48.51	2.3425	19 38 28.7	0.106	21	7 5 55.05	2.1540	17 42 58.6	4.668
22	5 20 8.96	2.3392	19 38 31.6	0.007	22	7 8 4.16	2.1498	17 38 15.9	4.752
23	5 22 29.21	2.3359	19 38 27.8	0.119	23	7 10 13.02	2.1456	17 33 28.4	4.836
24	5 24 49.26	2.3326	N.19 38 17.4	0.231	24	7 12 21.63	2.1416	N.17 28 36.0	4.915

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 21.					SUNDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 12 21.63	2.1416	N.17 28 36.0	4.915	0	8 50 37.73	1.9627	N.12 12 48.3	7.980
1	7 14 30.01	2.1374	17 23 38.7	4.993	1	8 52 35.40	1.9597	12 4 48.0	8.028
2	7 16 38.12	2.1328	17 18 36.7	5.072	2	8 54 32.90	1.9568	11 56 44.9	8.075
3	7 18 45.95	2.1284	17 13 30.0	5.151	3	8 56 30.23	1.9539	11 48 38.9	8.121
4	7 20 53.53	2.1244	17 8 18.5	5.230	4	8 58 27.37	1.9510	11 40 30.2	8.167
5	7 23 0.88	2.1205	17 3 2.4	5.308	5	9 0 24.35	1.9482	11 32 18.8	8.212
6	7 25 7.99	2.1164	16 57 41.6	5.385	6	9 2 21.17	1.9455	11 24 4.6	8.257
7	7 27 14.85	2.1123	16 52 16.2	5.460	7	9 4 17.82	1.9428	11 15 47.8	8.302
8	7 29 21.47	2.1082	16 46 46.3	5.535	8	9 6 14.31	1.9402	11 7 28.4	8.346
9	7 31 27.84	2.1041	16 41 11.9	5.610	9	9 8 10.64	1.9376	10 59 6.4	8.389
10	7 33 33.96	2.1000	16 35 32.9	5.685	10	9 10 6.81	1.9350	10 50 41.7	8.432
11	7 35 39.84	2.0959	16 29 49.6	5.758	11	9 12 2.83	1.9324	10 42 14.6	8.473
12	7 37 45.49	2.0918	16 24 2.0	5.830	12	9 13 58.70	1.9298	10 33 45.1	8.513
13	7 39 50.88	2.0878	16 18 10.0	5.902	13	9 15 54.41	1.9273	10 25 13.0	8.553
14	7 41 56.03	2.0838	16 12 13.8	5.973	14	9 17 49.98	1.9249	10 16 38.6	8.593
15	7 44 0.95	2.0798	16 6 13.3	6.043	15	9 19 45.41	1.9225	10 8 1.9	8.633
16	7 46 5.62	2.0758	16 0 8.6	6.112	16	9 21 40.68	1.9202	9 59 22.7	8.672
17	7 48 10.05	2.0718	15 53 59.8	6.181	17	9 23 35.82	1.9179	9 50 41.3	8.709
18	7 50 14.24	2.0679	15 47 46.8	6.249	18	9 25 30.82	1.9156	9 41 57.7	8.746
19	7 52 18.19	2.0640	15 41 29.8	6.317	19	9 27 25.68	1.9133	9 33 11.7	8.783
20	7 54 21.91	2.0601	15 35 8.8	6.385	20	9 29 20.41	1.9111	9 24 23.6	8.820
21	7 56 25.41	2.0563	15 28 43.7	6.452	21	9 31 15.02	1.9089	9 15 33.4	8.856
22	7 58 28.67	2.0525	15 22 14.5	6.518	22	9 33 9.49	1.9068	9 6 40.9	8.892
23	8 0 31.70	2.0486	N.15 15 41.5	6.583	23	9 35 3.84	1.9046	N. 8 57 46.4	8.926
	SATURDAY 22.					MONDAY 24.			
0	8 2 34.50	2.0448	N.15 9 4.8	6.644	0	9 36 58.07	1.9029	N. 8 48 49.9	8.960
1	8 4 37.07	2.0410	15 2 24.2	6.706	1	9 38 52.18	1.9010	8 39 51.2	8.993
2	8 6 39.42	2.0373	14 55 39.9	6.769	2	9 40 46.18	1.8991	8 30 50.6	9.026
3	8 8 41.56	2.0336	14 48 51.8	6.832	3	9 42 40.07	1.8972	8 21 48.2	9.058
4	8 10 43.47	2.0300	14 41 59.9	6.895	4	9 44 33.84	1.8953	8 12 43.7	9.090
5	8 12 45.16	2.0263	14 35 4.4	6.956	5	9 46 27.51	1.8936	8 3 37.4	9.121
6	8 14 46.62	2.0226	14 28 5.4	7.016	6	9 48 21.07	1.8918	7 54 29.2	9.152
7	8 16 47.86	2.0190	14 21 2.8	7.072	7	9 50 14.51	1.8901	7 45 19.1	9.182
8	8 18 48.89	2.0154	14 13 56.7	7.131	8	9 52 7.86	1.8885	7 36 7.3	9.212
9	8 20 49.72	2.0118	14 6 47.0	7.191	9	9 54 1.13	1.8870	7 26 53.7	9.241
10	8 22 50.31	2.0082	13 59 33.6	7.250	10	9 55 54.30	1.8855	7 17 38.3	9.270
11	8 24 50.70	2.0048	13 52 16.9	7.307	11	9 57 47.38	1.8840	7 8 21.3	9.298
12	8 26 50.90	2.0014	13 44 57.0	7.363	12	9 59 40.36	1.8825	6 59 2.8	9.325
13	8 28 50.88	1.9980	13 37 33.6	7.417	13	10 1 33.26	1.8811	6 49 42.4	9.352
14	8 30 50.66	1.9946	13 30 7.0	7.471	14	10 3 26.08	1.8797	6 40 20.5	9.378
15	8 32 50.25	1.9913	13 22 37.2	7.525	15	10 5 18.82	1.8784	6 30 57.2	9.403
16	8 34 49.62	1.9880	13 15 4.0	7.578	16	10 7 11.48	1.8771	6 21 32.2	9.428
17	8 36 48.80	1.9847	13 7 27.7	7.630	17	10 9 4.07	1.8758	6 12 5.8	9.452
18	8 38 47.80	1.9814	12 59 48.4	7.682	18	10 10 56.58	1.8745	6 2 38.0	9.476
19	8 40 46.58	1.9782	12 52 5.9	7.733	19	10 12 49.01	1.8733	5 53 8.6	9.500
20	8 42 45.18	1.9750	12 44 20.4	7.783	20	10 14 41.38	1.8722	5 43 37.9	9.523
21	8 44 43.60	1.9719	12 36 31.8	7.833	21	10 16 33.70	1.8712	5 34 5.9	9.545
22	8 46 41.82	1.9688	12 28 40.2	7.883	22	10 18 25.94	1.8703	5 24 32.5	9.567
23	8 48 39.86	1.9657	12 20 45.7	7.932	23	10 20 18.13	1.8693	5 14 57.9	9.588
24	8 50 37.73	1.9627	N.12 12 48.3	7.980	24	10 22 10.27	1.8683	N. 5 5 22.0	9.608

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 25.					THURSDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 22 10.27	1.8683	N. 5 5 22.0	9.608	0	11 51 43.20	1.8805	S. 2 49 12.2	9.943
1	10 24 2.34	1.8675	4 55 44.8	9.628	1	11 53 36.07	1.8820	2 59 8.6	9.935
2	10 25 54.37	1.8667	4 46 6.5	9.648	2	11 55 29.04	1.8834	3 9 4.5	9.927
3	10 27 46.37	1.8660	4 36 27.0	9.668	3	11 57 22.10	1.8848	3 18 59.9	9.918
4	10 29 38.30	1.8653	4 26 46.3	9.687	4	11 59 15.23	1.8863	3 28 54.8	9.909
5	10 31 30.20	1.8646	4 17 4.6	9.704	5	12 1 8.47	1.8879	3 38 49.1	9.900
6	10 33 22.07	1.8639	4 7 21.9	9.721	6	12 3 1.81	1.8895	3 48 42.9	9.890
7	10 35 13.88	1.8633	3 57 38.0	9.738	7	12 4 55.23	1.8912	3 58 36.0	9.879
8	10 37 5.67	1.8629	3 47 53.2	9.755	8	12 6 48.76	1.8929	4 8 28.4	9.867
9	10 38 57.44	1.8625	3 38 7.5	9.772	9	12 8 42.39	1.8946	4 18 20.1	9.855
10	10 40 49.18	1.8622	3 28 20.6	9.788	10	12 10 36.11	1.8963	4 28 11.2	9.842
11	10 42 40.90	1.8618	3 18 32.9	9.802	11	12 12 29.95	1.8981	4 38 1.4	9.828
12	10 44 32.60	1.8614	3 8 44.5	9.816	12	12 14 23.90	1.8999	4 47 50.6	9.813
13	10 46 24.26	1.8610	2 58 55.1	9.828	13	12 16 17.97	1.9018	4 57 39.0	9.798
14	10 48 15.92	1.8607	2 49 5.0	9.841	14	12 18 12.15	1.9038	5 7 26.4	9.782
15	10 50 7.57	1.8604	2 39 14.3	9.854	15	12 20 6.45	1.9058	5 17 12.9	9.766
16	10 51 59.21	1.8603	2 29 22.6	9.867	16	12 22 0.88	1.9078	5 26 58.5	9.749
17	10 53 50.84	1.8602	2 19 30.3	9.879	17	12 23 55.42	1.9099	5 36 43.0	9.732
18	10 55 42.46	1.8602	2 9 37.4	9.890	18	12 25 50.08	1.9120	5 46 26.3	9.714
19	10 57 34.08	1.8602	1 59 43.6	9.900	19	12 27 44.86	1.9142	5 56 8.6	9.695
20	10 59 25.70	1.8603	1 49 49.3	9.909	20	12 29 39.78	1.9163	6 5 49.7	9.675
21	11 1 17.34	1.8605	1 39 54.5	9.918	21	12 31 34.83	1.9185	6 15 29.7	9.654
22	11 3 8.98	1.8607	1 29 59.1	9.926	22	12 33 30.00	1.9207	6 25 8.5	9.633
23	11 5 0.63	1.8609	N. 1 20 3.3	9.933	23	12 35 25.32	1.9230	S. 6 34 45.9	9.612
	WEDNESDAY 26.					FRIDAY 28.			
0	11 6 52.29	1.8611	N. 1 10 7.1	9.940	0	12 37 20.79	1.9253	S. 6 44 21.9	9.589
1	11 8 43.96	1.8613	1 0 10.4	9.947	1	12 39 16.38	1.9277	6 53 56.6	9.565
2	11 10 35.66	1.8617	0 50 13.4	9.953	2	12 41 12.12	1.9302	7 3 29.8	9.540
3	11 12 27.38	1.8621	0 40 16.1	9.959	3	12 43 8.02	1.9327	7 13 1.5	9.516
4	11 14 19.11	1.8625	0 30 18.3	9.965	4	12 45 4.05	1.9352	7 22 31.8	9.490
5	11 16 10.88	1.8629	0 20 20.3	9.970	5	12 47 0.24	1.9377	7 32 0.5	9.465
6	11 18 2.68	1.8633	0 10 22.1	9.974	6	12 48 56.58	1.9402	7 41 27.7	9.438
7	11 19 54.49	1.8638	N. 0 0 23.4	9.978	7	12 50 53.06	1.9427	7 50 53.4	9.411
8	11 21 46.35	1.8644	S. 0 9 35.4	9.981	8	12 52 49.71	1.9453	8 0 17.3	9.383
9	11 23 38.25	1.8651	0 19 34.2	9.983	9	12 54 46.52	1.9480	8 9 39.4	9.353
10	11 25 30.18	1.8658	0 29 33.3	9.985	10	12 56 43.48	1.9507	8 18 59.8	9.323
11	11 27 22.16	1.8666	0 39 32.4	9.986	11	12 58 40.61	1.9534	8 28 18.4	9.292
12	11 29 14.21	1.8675	0 49 31.6	9.987	12	13 0 37.92	1.9562	8 37 35.0	9.260
13	11 31 6.29	1.8685	0 59 30.9	9.986	13	13 2 35.37	1.9590	8 46 49.9	9.228
14	11 32 58.43	1.8694	1 9 30.1	9.985	14	13 4 33.00	1.9619	8 56 2.8	9.196
15	11 34 50.62	1.8703	1 19 29.2	9.984	15	13 6 30.82	1.9648	9 5 13.6	9.163
16	11 36 42.86	1.8712	1 29 28.3	9.982	16	13 8 28.79	1.9677	9 14 22.6	9.129
17	11 38 35.17	1.8722	1 39 27.2	9.980	17	13 10 26.94	1.9706	9 23 29.4	9.096
18	11 40 27.54	1.8732	1 49 25.8	9.977	18	13 12 25.27	1.9734	9 32 34.0	9.059
19	11 42 19.96	1.8743	1 59 24.3	9.973	19	13 14 23.76	1.9764	9 41 36.6	9.022
20	11 44 12.46	1.8754	2 9 22.5	9.967	20	13 16 22.44	1.9793	9 50 36.9	8.985
21	11 46 5.03	1.8766	2 19 20.5	9.962	21	13 18 21.32	1.9825	9 59 34.9	8.947
22	11 47 57.68	1.8778	2 29 18.1	9.956	22	13 20 20.37	1.9857	10 8 30.6	8.908
23	11 49 50.40	1.8791	2 39 15.3	9.950	23	13 22 19.61	1.9889	10 17 23.9	8.868
24	11 51 43.20	1.8805	S. 2 49 12.2	9.943	24	13 24 19.03	1.9919	S. 10 26 14.9	8.828

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 24 19.03	1.9919	S.10 26 14.9	8.828
1	13 26 18.64	1.9952	10 35 3.5	8.788
2	13 28 18.45	1.9984	10 43 49.5	8.747
3	13 30 18.45	2.0016	10 52 32.9	8.705
4	13 32 18.63	2.0048	11 1 14.0	8.662
5	13 34 19.02	2.0080	11 9 52.2	8.618
6	13 36 19.61	2.0112	11 18 27.7	8.573
7	13 38 20.38	2.0145	11 27 0.8	8.528
8	13 40 21.36	2.0179	11 35 31.0	8.481
9	13 42 22.56	2.0213	11 43 58.2	8.433
10	13 44 23.95	2.0248	11 52 22.8	8.385
11	13 46 25.55	2.0282	12 0 44.4	8.336
12	13 48 27.36	2.0316	12 9 3.1	8.286
13	13 50 29.36	2.0350	12 17 18.7	8.235
14	13 52 31.57	2.0385	12 25 31.2	8.184
15	13 54 34.00	2.0420	12 33 40.5	8.132
16	13 56 36.62	2.0455	12 41 46.9	8.080
17	13 58 39.46	2.0490	12 49 50.0	8.026
18	14 0 42.53	2.0526	12 57 49.7	7.971
19	14 2 45.79	2.0562	13 5 46.3	7.915
20	14 4 49.27	2.0598	13 13 39.5	7.859
21	14 6 52.97	2.0634	13 21 29.2	7.802
22	14 8 56.88	2.0670	13 29 15.7	7.745
23	14 11 1.01	2.0706	S.13 36 58.6	7.686

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 13 5.37	2.0743	S.13 44 37.9	7.626
1	14 15 9.94	2.0780	13 52 13.6	7.565
2	14 17 14.73	2.0816	13 59 45.6	7.504
3	14 19 19.73	2.0853	14 7 14.0	7.442
4	14 21 24.96	2.0890	14 14 38.7	7.380
5	14 23 30.41	2.0926	14 21 59.5	7.317
6	14 25 36.07	2.0963	14 29 16.5	7.253
7	14 27 41.96	2.1000	14 36 29.8	7.188
8	14 29 48.07	2.1037	14 43 39.0	7.122
9	14 31 54.39	2.1074	14 50 44.2	7.055
10	14 34 0.95	2.1112	14 57 45.5	6.987
11	14 36 7.73	2.1149	15 4 42.6	6.918
12	14 38 14.73	2.1186	15 11 35.4	6.848
13	14 40 21.96	2.1223	15 18 24.2	6.778
14	14 42 29.41	2.1260	15 25 8.7	6.707
15	14 44 37.07	2.1297	15 31 48.9	6.635
16	14 46 44.97	2.1335	15 38 24.9	6.563
17	14 48 53.09	2.1372	15 44 56.4	6.490
18	14 51 1.42	2.1409	15 51 23.5	6.416
19	14 53 9.98	2.1446	15 57 46.2	6.340
20	14 55 18.76	2.1483	16 4 4.3	6.264
21	14 57 27.77	2.1520	16 10 17.9	6.187
22	14 59 37.00	2.1557	16 16 26.9	6.110
23	15 1 46.45	2.1594	16 22 31.1	6.032
24	15 3 56.12	2.1630	S.16 28 30.6	5.953

MONDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 3 56.12	2.1630	S.16 28 30.6	5.958
1	15 6 6.01	2.1667	16 34 25.4	5.873
2	15 8 16.11	2.1704	16 40 15.3	5.792
3	15 10 26.43	2.1741	16 46 0.4	5.710
4	15 12 36.98	2.1777	16 51 40.6	5.628
5	15 14 47.74	2.1813	16 57 15.8	5.546
6	15 16 58.72	2.1848	17 2 46.1	5.463
7	15 19 9.92	2.1883	17 8 11.5	5.380
8	15 21 21.32	2.1919	17 13 31.7	5.296
9	15 23 32.93	2.1956	17 18 46.6	5.209
10	15 25 44.78	2.1992	17 23 56.6	5.123
11	15 27 56.83	2.2027	17 29 1.3	5.035
12	15 30 9.09	2.2061	17 34 0.6	4.946
13	15 32 21.56	2.2096	17 38 54.7	4.857
14	15 34 34.23	2.2129	17 43 43.4	4.767
15	15 36 47.09	2.2163	17 48 26.8	4.677
16	15 39 0.18	2.2197	17 53 4.7	4.587
17	15 41 13.46	2.2231	17 57 37.1	4.496
18	15 43 26.94	2.2265	18 2 4.1	4.404
19	15 45 40.64	2.2298	18 6 25.6	4.312
20	15 47 54.53	2.2331	18 10 41.4	4.218
21	15 50 8.60	2.2364	18 14 51.5	4.123
22	15 52 22.89	2.2397	18 18 56.1	4.028
23	15 54 37.36	2.2429	S.18 22 54.9	3.932

TUESDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 56 52.00	2.2460	S.18 26 47.8	3.836

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, . .	8	3	37.0
○ Full Moon, . . .	14	18	15.4
☾ Last Quarter, . .	21	23	27.3
● New Moon, . .	30	3	28.0

	d	h
☾ Perigee, ...	13	5.4
☾ Apogee, ...	25	5.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
2	Sun	W.	17° 15′ 43″	3347	18° 39′ 0″	3332	20° 2′ 34″	3319	21° 26′ 23″	3307
	Jupiter	E.	29 18 17	2997	27 48 1	2992	26 17 38	2985	24 47 7	2979
	Antares	E.	41 11 58	3009	39 41 56	3008	38 11 53	3007	36 41 49	3006
	a Aquilæ	E.	93 16 48	3330	91 53 11	3322	90 29 25	3315	89 5 31	3309
3	Sun	W.	28 28 46	3264	29 53 51	3244	31 19 8	3235	32 44 36	3225
	Antares	E.	29 11 49	3029	27 42 4	3031	26 12 30	3043	24 43 10	3058
	a Aquilæ	E.	82 4 18	3282	80 39 46	3278	79 15 9	3275	77 50 28	3272
	Fomalhaut	E.	111 19 45	3409	109 57 39	3392	108 35 13	3375	107 12 28	3358
4	Sun	W.	39 54 54	3175	41 21 33	3165	42 48 24	3155	44 15 27	3144
	Venus	W.	18 57 52	3266	20 22 45	3254	21 47 50	3243	23 13 8	3233
	a Aquilæ	E.	70 46 25	3265	69 21 33	3266	67 56 42	3267	66 31 52	3270
	Fomalhaut	E.	100 14 12	3286	98 49 44	3273	97 25 1	3260	96 0 3	3249
5	Sun	W.	51 33 56	3091	53 2 17	3079	54 30 52	3069	55 59 40	3056
	Venus	W.	30 22 49	3178	31 49 25	3166	33 16 15	3154	34 43 19	3143
	Jupiter	W.	7 36 35	2822	9 10 34	2807	10 44 53	2792	12 19 31	2779
	a Aquilæ	E.	59 28 55	3300	58 4 43	3309	56 40 42	3320	55 16 54	3334
	Fomalhaut	E.	88 52 0	3199	87 25 48	3188	85 59 25	3180	84 32 52	3173
	a Pegasi	E.	105 47 23	2908	104 15 14	2895	102 42 49	2883	101 10 9	2871
6	Sun	W.	63 27 21	2997	64 57 38	2984	66 28 11	2972	67 58 59	2958
	Venus	W.	42 2 16	3082	43 30 48	3069	44 59 36	3056	46 28 40	3043
	Jupiter	W.	20 16 55	2717	21 53 12	2706	23 29 44	2693	25 6 33	2681
	a Aquilæ	E.	48 22 49	3442	47 1 20	3474	45 40 27	3511	44 20 15	3554
	Fomalhaut	E.	77 18 1	3142	75 50 42	3138	74 23 18	3133	72 55 49	3131
	a Pegasi	E,	93 22 54	2811	91 48 41	2800	90 14 13	2788	88 39 29	2776
7	Sun	W.	75 37 10	2892	77 9 39	2878	78 42 26	2865	80 15 30	2850
	Venus	W.	53 58 5	2975	55 28 49	2961	56 59 51	2947	58 31 10	2932
	Jupiter	W.	33 14 46	2618	34 53 16	2605	36 32 4	2593	38 11 9	2579
	Antares	W.	23 46 6	2752	25 21 37	2716	26 57 56	2684	28 34 58	2655
	Fomalhaut	E.	65 38 0	3133	64 10 30	3136	62 43 4	3142	61 15 45	3148
	a Pegasi	E.	80 42 5	2720	79 5 52	2710	77 29 25	2698	75 52 43	2686
8	Sun	W.	88 5 30	2779	89 40 26	2763	91 15 42	2750	92 51 16	2735
	Venus	W.	66 12 25	2859	67 45 36	2845	69 19 6	2829	70 52 56	2815
	Jupiter	W.	46 31 12	2512	48 12 8	2498	49 53 24	2485	51 34 59	2471
	Antares	W.	36 48 54	2539	38 29 13	2519	40 10 0	2499	41 51 14	2481
	Fomalhaut	E.	54 2 7	3218	52 36 19	3241	51 10 58	3267	49 46 8	3297
	a Pegasi	E.	67 45 52	2640	66 7 52	2632	64 29 41	2624	62 51 19	2617
	a Arietis	E.	110 55 56	2519	109 15 9	2504	107 34 2	2489	105 52 34	2475
9	Sun	W.	100 54 2	2661	102 31 34	2646	104 9 26	2632	105 47 37	2618
	Venus	W.	78 46 57	2740	80 22 44	2725	81 58 51	2710	83 35 17	2695
	Jupiter	W.	60 7 45	2402	61 51 17	2389	63 35 8	2375	65 19 19	2361
	Antares	W.	50 23 42	2395	52 7 24	2380	53 51 28	2364	55 35 55	2348
	Fomalhaut	E.	42 52 53	3542	41 33 15	3614	40 14 56	3698	38 58 7	3797
	a Pegasi	E.	54 37 21	2593	52 58 16	2591	51 19 9	2591	49 40 1	2593
	a Arietis	E.	97 20 5	2403	95 36 34	2389	93 52 44	2375	92 8 34	2362
10	Sun	W.	114 3 23	2548	115 43 29	2535	117 23 53	2522	119 4 36	2510
	Venus	W.	91 42 20	2624	93 20 42	2611	94 59 22	2597	96 38 21	2585
	Jupiter	W.	74 5 5	2296	75 51 11	2283	77 37 35	2270	79 24 18	2258

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
2	Sun	W.	22° 50′ 26″	3295	24° 14′ 43″	3285	25° 39′ 12″	3275	27° 3′ 53″	3265
	Jupiter	E.	23 16 28	2973	21 45 41	2966	20 14 45	2959	18 43 41	2953
	Antares	E.	35 11 44	3007	33 41 40	3009	32 11 39	3012	30 41 41	3017
	α Aquilæ	E.	87 41 30	3302	86 17 21	3297	84 53 6	3292	83 28 45	3287
3	Sun	W.	34 10 16	3214	35 36 8	3204	37 2 12	3195	38 28 27	3185
	Antares	E.	23 14 9	3078	21 45 32	3104	20 17 27	3138	18 50 4	3184
	α Aquilæ	E.	76 25 44	3270	75 0 57	3268	73 36 8	3266	72 11 17	3265
	Fomalhaut	E.	105 49 24	3343	104 26 2	3327	103 2 22	3313	101 38 25	3299
4	Sun	W.	45 42 43	3133	47 10 12	3123	48 37 54	3113	50 5 48	3101
	Venus	W.	24 38 38	3222	26 4 21	3211	27 30 17	3200	28 56 26	3188
	α Aquilæ	E.	65 7 6	3274	63 42 24	3278	62 17 47	3284	60 53 17	3291
	Fomalhaut	E.	94 34 52	3237	93 9 27	3227	91 43 50	3217	90 18 1	3207
5	Sun	W.	57 28 43	3045	58 58 0	3033	60 27 32	3021	61 57 19	3009
	Venus	W.	36 10 37	3130	37 38 10	3119	39 5 57	3106	40 33 59	3094
	Jupiter	W.	13 54 27	2766	15 29 40	2753	17 5 9	2741	18 40 54	2729
	α Aquilæ	E.	53 53 22	3351	52 30 9	3369	51 7 17	3390	49 44 49	3415
	Fomalhaut	E.	83 6 10	3165	81 39 19	3156	80 12 20	3153	78 45 14	3147
	α Pegasi	E.	99 37 13	2859	98 4 1	2847	96 30 34	2835	94 56 52	2823
6	Sun	W.	69 30 4	2946	71 1 25	2932	72 33 3	2919	74 4 58	2905
	Venus	W.	47 58 0	3030	49 27 36	3016	50 57 29	3003	52 27 38	2989
	Jupiter	W.	26 43 38	2669	28 21 0	2657	29 58 38	2644	31 36 33	2631
	α Aquilæ	E.	43 0 50	3601	41 42 17	3656	40 24 43	3719	39 8 16	3792
	Fomalhaut	E.	71 28 17	3129	70 0 43	3129	68 33 8	3129	67 5 33	3130
	α Pegasi	E.	87 4 30	2765	85 29 16	2753	83 53 47	2742	82 18 3	2732
7	Sun	W.	81 48 53	2835	83 22 35	2821	84 56 35	2808	86 30 53	2793
	Venus	W.	60 2 48	2918	61 34 44	2903	63 6 59	2888	64 39 33	2874
	Jupiter	W.	39 50 33	2566	41 30 15	2553	43 10 15	2539	44 50 34	2525
	Antares	W.	30 12 38	2629	31 50 54	2604	33 29 43	2581	35 9 4	2560
	Fomalhaut	E.	59 48 34	3158	58 21 34	3169	56 54 48	3183	55 28 18	3198
	α Pegasi	E.	74 15 47	2678	72 38 38	2668	71 1 15	2659	69 23 40	2649
8	Sun	W.	94 27 10	2719	96 3 24	2705	97 39 57	2690	99 16 50	2676
	Venus	W.	72 27 5	2799	74 1 34	2785	75 36 22	2769	77 11 30	2755
	Jupiter	W.	53 16 53	2457	54 59 7	2443	56 41 40	2429	58 24 33	2416
	Antares	W.	43 32 54	2463	45 14 59	2446	46 57 29	2428	48 40 24	2412
	Fomalhaut	E.	48 21 53	3332	46 58 19	3374	45 35 33	3423	44 13 42	3478
	α Pegasi	E.	61 12 47	2610	59 34 6	2604	57 55 17	2600	56 16 22	2596
	α Arietis	E.	104 10 45	2460	102 28 36	2445	100 46 6	2431	99 3 16	2417
9	Sun	W.	107 26 8	2604	109 4 58	2589	110 44 8	2576	112 23 36	2562
	Venus	W.	85 12 3	2681	86 49 8	2666	88 26 33	2652	90 4 17	2638
	Jupiter	W.	67 3 50	2348	68 48 40	2335	70 33 49	2321	72 19 18	2309
	Antares	W.	57 20 44	2333	59 5 55	2318	60 51 28	2304	62 37 22	2289
	Fomalhaut	E.	37 43 2	3912	36 29 54	4044	35 18 58	4196	34 10 30	4378
	α Pegasi	E.	48 0 56	2596	46 21 56	2601	44 43 3	2610	43 4 21	2621
	α Arietis	E.	90 24 4	2348	88 39 15	2335	86 54 7	2323	85 8 41	2311
10	Sun	W.	120 45 36	2497	122 26 54	2485	124 8 29	2473	125 50 20	2462
	Venus	W.	98 17 37	2572	99 57 11	2559	101 37 2	2548	103 17 9	2536
	Jupiter	W.	81 11 18	2247	82 58 36	2235	84 46 11	2225	86 34 2	2214

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Antares	W.	64° 23′ 37″	2276	66° 10′ 12″	2262	67° 57′ 7″	2249	69° 44′ 22″	2237
	a Pegasi	E.	41 25 55	2686	39 47 49	2666	38 10 8	2678	36 32 59	2709
	a Arietis	E.	83 22 57	2298	81 36 55	2286	79 50 35	2275	78 3 59	2264
11	Jupiter	W.	88 22 9	2203	90 10 32	2193	91 59 10	2183	93 48 3	2174
	Antares	W.	78 45 8	2178	80 34 8	2168	82 23 24	2159	84 12 55	2149
	a Aquilæ	W.	34 43 36	3646	36 1 21	3506	37 21 39	3384	38 44 14	3277
	a Arietis	E.	69 7 4	2215	67 18 59	2207	65 30 42	2200	63 42 14	2193
	Aldebaran	E.	102 9 35	2151	100 19 58	2141	98 29 56	2131	96 39 44	2122
	Mars	E.	111 32 46	2199	109 44 17	2188	107 55 31	2177	106 6 29	2168
12	Antares	W.	93 23 44	2111	95 14 27	2105	97 5 19	2099	98 56 20	2094
	a Aquilæ	W.	46 4 28	2896	47 36 52	2842	49 10 25	2795	50 45 0	2751
	a Arietis	E.	54 37 48	2172	52 48 38	2171	50 59 27	2170	49 10 15	2172
	Aldebaran	E.	87 25 28	2083	85 34 3	2077	83 42 29	2072	81 50 46	2066
	Mars	E.	96 57 56	2127	95 7 38	2120	93 17 10	2115	91 26 33	2109
13	a Aquilæ	W.	58 50 20	2596	60 29 20	2575	62 8 49	2557	63 48 43	2540
	Fomalhaut	W.	34 4 48	3892	35 16 35	3815	36 31 22	3661	37 48 51	3527
	a Arietis	E.	40 5 27	2202	38 17 2	2214	36 28 56	2230	34 41 13	2247
	Aldebaran	E.	72 30 35	2052	70 38 22	2051	68 46 7	2050	66 53 51	2050
	Mars	E.	82 11 39	2091	80 20 26	2090	78 29 11	2088	76 37 54	2088
14	a Aquilæ	W.	72 12 50	2492	73 54 14	2488	75 35 44	2487	77 17 16	2486
	Fomalhaut	W.	44 47 41	3080	46 16 15	3022	47 46 1	2971	49 16 50	2927
	a Pegasi	W.	25 16 48	3060	26 45 46	2942	28 17 12	2845	29 50 41	2767
	Aldebaran	E.	57 33 1	2063	55 41 5	2068	53 49 16	2073	51 57 35	2079
	Mars	E.	67 21 48	2098	65 30 46	2103	63 39 51	2107	61 49 3	2113
	Pollux	E.	100 7 42	2148	98 17 56	2151	96 28 15	2156	94 38 41	2161
15	a Aquilæ	W.	85 44 27	2507	87 25 31	2516	89 6 24	2526	90 47 3	2536
	Fomalhaut	W.	57 2 37	2784	58 37 26	2768	60 12 36	2754	61 48 4	2744
	a Pegasi	W.	37 58 38	2543	39 38 52	2520	41 19 37	2502	43 0 48	2487
	Aldebaran	E.	42 41 56	2121	40 51 29	2132	39 1 18	2143	37 11 24	2155
	Mars	E.	52 37 33	2151	50 47 52	2161	48 58 26	2171	47 9 15	2182
	Pollux	E.	85 33 13	2200	83 44 45	2210	81 56 32	2221	80 8 36	2233
16	Fomalhaut	W.	69 47 45	2728	71 23 48	2731	72 59 47	2736	74 35 40	2742
	a Pegasi	W.	51 30 9	2462	53 12 15	2465	54 54 18	2468	56 36 16	2473
	Aldebaran	E.	28 6 53	2228	26 19 7	2246	24 31 48	2266	22 44 57	2286
	Mars	E.	38 7 53	2248	36 20 37	2264	34 33 44	2279	32 47 14	2296
	Pollux	E.	71 13 40	2304	69 27 46	2320	67 42 15	2337	65 57 10	2355
	Regulus	E.	107 40 49	2223	105 52 54	2236	104 5 20	2250	102 18 7	2265
17	Fomalhaut	W.	82 32 23	2793	84 7 0	2806	85 41 18	2823	87 15 16	2838
	a Pegasi	W.	65 3 40	2518	66 44 28	2530	68 25 0	2543	70 5 14	2556
	a Arietis	W.	21 49 3	2776	23 24 2	2734	24 59 57	2704	26 36 33	2681
	Mars	E.	24 1 16	2394	22 17 33	2417	20 34 22	2441	18 51 46	2472
	Pollux	E.	57 18 33	2456	55 36 18	2479	53 54 35	2503	52 13 26	2527
	Regulus	E.	93 27 37	2344	91 42 41	2361	89 58 10	2378	88 14 3	2396
18	Fomalhaut	W.	94 59 32	2933	96 31 9	2954	98 2 19	2977	99 33 0	3000
	a Pegasi	W.	78 21 31	2632	79 59 43	2649	81 37 32	2666	83 14 59	2682
	a Arietis	W.	34 44 14	2662	36 21 59	2655	37 59 39	2661	39 37 11	2669
	Pollux	E.	43 56 32	2665	42 19 5	2697	40 42 21	2731	39 6 22	2766

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Antares	W.	71° 31′ 55″	2224	73° 19′ 47″	2212	75° 7′ 57″	2200	76° 56′ 24″	2189
	a Pegasi	E.	34 56 31	2746	33 20 51	2790	31 46 10	2846	30 12 42	2914
	a Arietis	E.	76 17 6	2253	74 29 57	2243	72 42 34	2233	70 54 56	2224
11	Jupiter	W.	95 37 9	2166	97 26 28	2157	99 16 0	2149	101 5 44	2142
	Antares	W.	86 2 40	2140	87 52 38	2132	89 42 49	2124	91 33 11	2117
	a Aquilæ	W.	40 8 52	3182	41 35 23	3098	43 3 35	3022	44 33 20	2956
	a Arietis	E.	61 53 36	2187	60 4 49	2182	58 15 54	2178	56 26 53	2175
	Aldebaran	E.	94 49 18	2113	92 58 39	2105	91 7 47	2097	89 16 43	2090
	Mars	E.	104 17 13	2159	102 27 43	2150	100 38 0	2141	98 48 4	2134
12	Antares	W.	100 47 28	2090	102 38 42	2087	104 30 1	2085	106 21 23	2083
	a Aquilæ	W.	52 20 32	2718	53 56 55	2679	55 34 3	2648	57 11 53	2621
	a Arietis	E.	47 21 5	2174	45 31 58	2178	43 42 57	2184	41 54 6	2192
	Aldebaran	E.	79 58 55	2062	78 6 58	2056	76 14 54	2055	74 22 46	2053
	Mars	E.	89 35 47	2104	87 44 54	2099	85 53 54	2096	84 2 49	2093
13	a Aquilæ	W.	65 29 0	2527	67 9 36	2515	68 50 28	2506	70 31 34	2498
	Fomalhaut	W.	39 8 45	3412	40 30 48	3311	41 54 47	3224	43 20 28	3147
	a Arietis	E.	32 53 56	2270	31 7 13	2298	29 21 11	2332	27 35 58	2371
	Aldebaran	E.	65 1 35	2052	63 9 21	2053	61 17 10	2056	59 25 3	2059
	Mars	E.	74 46 37	2089	72 55 21	2090	71 4 7	2092	69 12 55	2095
14	a Aquilæ	W.	78 58 49	2487	80 40 21	2489	82 21 50	2493	84 3 13	2499
	Fomalhaut	W.	50 48 34	2889	52 21 7	2856	53 54 22	2828	55 28 14	2804
	a Pegasi	W.	31 25 52	2702	33 2 29	2649	34 40 17	2607	36 19 3	2571
	Aldebaran	E.	50 6 4	2086	48 14 43	2094	46 23 34	2102	44 32 38	2111
	Mars	E.	59 58 24	2119	58 7 54	2126	56 17 35	2134	54 27 28	2142
	Pollux	E.	92 49 14	2167	90 59 57	2174	89 10 50	2182	87 21 55	2190
15	a Aquilæ	W.	92 27 26	2548	94 7 32	2561	95 47 20	2576	97 26 48	2591
	Fomalhaut	W.	63 23 46	2736	64 59 38	2730	66 35 38	2728	68 11 41	2727
	a Pegasi	W.	44 42 19	2477	46 24 5	2470	48 6 1	2465	49 48 3	2462
	Aldebaran	E.	35 21 48	2168	33 32 32	2182	31 43 37	2196	29 55 3	2212
	Mars	E.	45 20 21	2194	43 31 45	2207	41 43 28	2220	39 55 30	2234
	Pollux	E.	78 20 57	2245	76 33 37	2259	74 46 37	2272	72 59 57	2287
16	Fomalhaut	W.	76 11 24	2750	77 46 58	2758	79 22 21	2769	80 57 30	2781
	a Pegasi	W.	58 18 7	2480	59 59 48	2488	61 41 18	2497	63 22 36	2507
	Aldebaran	E.	20 58 37	2309	19 12 50	2333	17 27 39	2362	15 43 10	2396
	Mars	E.	31 1 9	2314	29 15 30	2332	27 30 17	2351	25 45 32	2371
	Pollux	E.	64 12 31	2374	62 28 19	2394	60 44 35	2413	59 1 19	2434
	Regulus	E.	100 31 16	2280	98 44 47	2295	96 58 40	2311	95 12 57	2327
17	Fomalhaut	W.	88 48 54	2856	90 22 9	2874	91 55 1	2893	93 27 29	2912
	a Pegasi	W.	71 45 10	2570	73 24 46	2586	75 4 2	2600	76 42 57	2615
	a Arietis	W.	28 13 38	2686	29 51 3	2667	31 28 41	2652	33 6 26	2649
	Mars	E.	17 9 53	2504	15 28 45	2541	13 48 29	2589	12 9 19	2650
	Pollux	E.	50 32 50	2558	48 52 50	2579	47 13 26	2606	45 34 39	2635
	Regulus	E.	86 30 22	2413	84 47 6	2431	83 4 16	2450	81 21 52	2467
18	Fomalhaut	W.	101 3 13	3024	102 32 56	3049	104 2 8	3074	105 30 49	3101
	a Pegasi	W.	84 52 3	2700	86 28 43	2718	88 4 59	2736	89 40 52	2753
	a Arietis	W.	41 14 32	2678	42 51 42	2687	44 28 39	2698	46 5 22	2710
	Pollux	E.	37 31 9	2804	35 56 46	2845	34 23 16	2888	32 50 42	2935

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Regulus	E.	79° 39′ 53″	2486	77° 58′ 20″	2504	76° 17′ 13″	2523	74° 36′ 32″	2542
	Sun	E.	136 59 29	2796	135 24 56	2816	133 50 49	2836	132 17 8	2855
19	α Pegasi	W.	91 16 21	2772	92 51 26	2790	94 26 7	2809	96 0 23	2828
	α Arietis	W.	47 41 49	2722	49 18 0	2735	50 53 54	2747	52 29 31	2760
	Aldebaran	W.	13 53 10	2702	15 29 47	2703	17 6 23	2709	18 42 51	2717
	Pollux	E.	31 19 8	2988	29 48 40	3045	28 19 23	3109	26 51 24	3182
	Regulus	E.	66 19 35	2635	64 41 28	2655	63 3 47	2672	61 26 30	2691
	Sun	E.	124 34 59	2954	123 3 48	2973	121 33 1	2993	120 2 39	3011
20	α Arietis	W.	60 23 8	2830	61 56 57	2844	63 30 28	2857	65 3 42	2871
	Aldebaran	W.	26 41 51	2777	28 16 49	2790	29 51 30	2805	31 25 52	2818
	Mars	W.	16 30 35	2843	18 4 7	2845	19 37 36	2851	21 10 58	2859
	Regulus	E.	53 26 12	2782	51 51 20	2799	50 16 51	2816	48 42 44	2834
	Sun	E.	112 36 34	3103	111 8 28	3120	109 40 43	3138	108 13 19	3154
21	α Arietis	W.	72 45 28	2937	74 17 0	2949	75 48 17	2962	77 19 18	2973
	Aldebaran	W.	39 13 21	2884	40 46 0	2897	42 18 23	2909	43 50 30	2921
	Mars	W.	28 54 54	2909	30 27 2	2919	31 58 57	2930	33 30 38	2940
	Regulus	E.	40 57 43	2919	39 25 48	2935	37 54 14	2951	36 23 0	2969
	Sun	E.	101 1 15	3234	99 35 46	3248	98 10 34	3262	96 45 38	3276
22	α Arietis	W.	84 50 49	3027	86 20 28	3038	87 49 54	3047	89 19 9	3056
	Aldebaran	W.	51 27 28	2976	52 58 11	2985	54 28 43	2994	55 59 3	3003
	Mars	W.	41 5 57	2987	42 36 26	2996	44 6 44	3005	45 36 52	3012
	Regulus	E.	28 52 14	3056	27 23 11	3077	25 54 33	3098	24 26 21	3120
	Sun	E.	89 44 51	3338	88 21 23	3348	86 58 7	3359	85 35 4	3369
23	α Arietis	W.	96 42 44	3096	98 10 59	3103	99 39 5	3109	101 7 4	3114
	Aldebaran	W.	63 28 9	3041	64 57 31	3047	66 26 46	3052	67 55 54	3058
	Mars	W.	53 5 15	3045	54 34 32	3050	56 3 43	3055	57 32 48	3060
	Pollux	W.	23 33 20	3644	24 51 7	3584	26 9 59	3535	27 29 45	3495
	Sun	E.	78 42 27	3412	77 20 24	3418	75 58 28	3424	74 36 39	3431
24	Aldebaran	W.	75 20 8	3077	76 48 46	3079	78 17 21	3082	79 45 53	3085
	Mars	W.	64 57 0	3075	66 25 40	3077	67 54 18	3078	69 22 55	3078
	Pollux	W.	34 18 0	3361	35 41 1	3343	37 4 23	3327	38 28 3	3313
	Sun	E.	67 49 3	3452	66 27 45	3455	65 6 31	3457	63 45 19	3459
25	Aldebaran	W.	87 8 14	3086	88 36 41	3084	90 5 10	3083	91 33 40	3082
	Mars	W.	76 45 52	3077	78 14 30	3076	79 43 9	3073	81 11 51	3072
	Pollux	W.	45 30 1	3259	46 55 1	3249	48 20 12	3240	49 45 34	3231
	Sun	E.	56 59 40	3462	55 38 33	3461	54 17 25	3460	52 56 16	3458
26	Aldebaran	W.	98 56 47	3068	100 25 36	3065	101 54 29	3061	103 23 26	3057
	Mars	W.	88 36 8	3056	90 5 12	3051	91 34 22	3047	93 3 37	3041
	Pollux	W.	56 54 50	3192	58 21 9	3183	59 47 38	3177	61 14 15	3168
	Regulus	W.	19 54 17	3228	21 19 53	3204	22 45 58	3183	24 12 27	3165
	Sun	E.	46 9 51	3444	44 48 24	3439	43 26 52	3435	42 5 15	3431
27	Mars	W.	100 31 34	3013	102 1 31	3006	103 31 36	3000	105 1 49	2993
	Pollux	W.	68 29 42	3129	69 57 16	3122	71 24 59	3114	72 52 52	3105
	Regulus	W.	31 29 44	3096	32 57 59	3084	34 26 28	3073	35 55 10	3062
	Sun	E.	35 15 44	3402	33 53 30	3396	32 31 9	3389	31 8 40	3383

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Regulus	E.	72° 56′ 17″	2561	71° 16′ 28″	2580	69° 37′ 5″	2599	67° 58′ 7″	2617
	Sun	E.	130 43 52	2875	129 11 1	2894	127 38 35	2915	126 6 35	2934
19	α Pegasi	W.	97 34 15	2846	99 7 43	2865	100 40 47	2883	102 13 27	2902
	α Arietis	W.	54 4 51	2774	55 39 53	2788	57 14 36	2802	58 49 1	2816
	Aldebaran	W.	20 19 8	2727	21 55 12	2738	23 31 2	2750	25 6 35	2763
	Pollux	E.	25 24 53	3265	24 0 1	3362	22 37 1	3475	21 16 9	3609
	Regulus	E.	59 49 38	2709	58 13 10	2728	56 37 7	2746	55 1 28	2763
	Sun	E.	118 32 40	3030	117 3 5	3048	115 33 52	3067	114 5 2	3085
20	α Arietis	W.	66 36 38	2885	68 9 16	2899	69 41 36	2912	71 13 40	2924
	Aldebaran	W.	32 59 57	2831	34 33 44	2845	36 7 13	2858	37 40 26	2872
	Mars	W.	22 44 10	2868	24 17 10	2877	25 49 58	2887	27 22 33	2896
	Regulus	E.	47 9 0	2851	45 35 38	2868	44 2 38	2885	42 30 0	2901
	Sun	E.	106 46 15	3171	105 19 31	3188	103 53 7	3204	102 27 2	3219
21	α Arietis	W.	78 50 5	2985	80 20 37	2997	81 50 54	3007	83 20 58	3018
	Aldebaran	W.	45 22 22	2933	46 53 59	2944	48 25 22	2954	49 56 32	2965
	Mars	W.	35 2 6	2950	36 33 22	2960	38 4 25	2969	39 35 17	2978
	Regulus	E.	34 52 8	2985	33 21 37	3003	31 51 28	3020	30 21 40	3038
	Sun	E.	95 20 59	3289	93 56 35	3302	92 32 26	3315	91 8 32	3326
22	α Arietis	W	90 48 13	3065	92 17 6	3073	93 45 48	3081	95 14 21	3089
	Aldebaran	W.	57 29 12	3012	58 59 10	3019	60 28 59	3027	61 58 38	3034
	Mars	W.	47 6 50	3019	48 36 39	3026	50 6 19	3033	51 35 51	3039
	Regulus	E.	22 58 36	3146	21 31 22	3174	20 4 42	3207	18 38 41	3246
	Sun	E.	84 12 12	3379	82 49 31	3387	81 27 0	3396	80 4 39	3404
23	α Arietis	W.	102 34 56	3120	104 2 41	3126	105 30 19	3131	106 57 51	3135
	Aldebaran	W.	69 24 55	3063	70 53 50	3067	72 22 40	3070	73 51 26	3073
	Mars	W.	59 1 47	3064	60 30 41	3067	61 59 31	3070	63 28 17	3073
	Pollux	W.	28 50 15	3460	30 11 24	3429	31 33 8	3403	32 55 21	3380
	Sun	E.	73 14 57	3436	71 53 21	3440	70 31 50	3445	69 10 24	3449
24	Aldebaran	W.	81 14 23	3084	82 42 52	3085	84 11 20	3086	85 39 47	3086
	Mars	W.	70 51 31	3079	72 20 6	3079	73 48 41	3079	75 17 16	3078
	Pollux	W.	39 51 59	3300	41 16 10	3288	42 40 35	3278	44 5 12	3268
	Sun	E.	62 24 9	3461	61 3 1	3462	59 41 54	3462	58 20 47	3462
25	Aldebaran	W.	93 2 12	3080	94 30 46	3078	95 59 23	3075	97 28 3	3072
	Mars	W.	82 40 35	3069	84 9 22	3066	85 38 13	3063	87 7 8	3059
	Pollux	W.	51 11 6	3223	52 36 48	3215	54 2 39	3207	55 28 40	3199
	Sun	E.	51 35 5	3455	50 13 51	3453	48 52 34	3450	47 31 14	3447
26	Aldebaran	W.	104 52 28	3052	106 21 36	3047	107 50 50	3043	109 20 10	3037
	Mars	W.	94 32 59	3036	96 2 27	3030	97 32 2	3025	99 1 44	3018
	Pollux	W.	62 41 2	3161	64 7 58	3153	65 35 3	3145	67 2 18	3138
	Regulus	W.	25 39 18	3148	27 6 29	3133	28 33 58	3120	30 1 43	3107
	Sun	E.	40 43 33	3425	39 21 45	3420	37 59 51	3415	36 37 51	3408
27	Mars	W.	106 32 10	2986	108 2 40	2978	109 33 20	2971	111 4 9	2963
	Pollux	W.	74 20 55	3098	75 49 7	3090	77 17 29	3081	78 46 2	3073
	Regulus	W.	37 24 6	3052	38 53 14	3043	40 22 34	3032	41 52 7	3022
	Sun	E.	29 46 4	3375	28 23 19	3368	27 0 26	3360	25 37 24	3352

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semidiameter.	Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	14 27 45.09	9.822	S. 14 36 48.9	47.81	16 10.02	67.01	16 18.17	0.034
Wed.	2	14 31 41.19	9.855	14 55 49.6	47.21	16 10.27	67.12	16 18.63	0.001
Thur.	3	14 35 38.10	9.889	15 14 35.7	46.60	16 10.52	67.24	16 18.27	0.032
Fri.	4	14 39 35.82	9.922	15 33 6.7	45.96	16 10.77	67.36	16 17.11	0.065
Sat.	5	14 43 34.35	9.956	15 51 22.3	45.31	16 11.02	67.48	16 15.14	0.099
Sun.	6	14 47 33.69	9.990	16 9 21.9	44.64	16 11.26	67.60	16 12.37	0.133
Mon.	7	14 51 33.85	10.024	16 27 5.2	43.95	16 11.50	67.72	16 8.76	0.167
Tues.	8	14 55 34.83	10.058	16 44 31.8	43.25	16 11.74	67.84	16 4.34	0.201
Wed.	9	14 59 36.65	10.093	17 1 41.5	42.53	16 11.98	67.96	15 59.10	0.236
Thur.	10	15 3 39.31	10.127	17 18 33.7	41.79	16 12.21	68.08	15 53.01	0.270
Fri.	11	15 7 42.80	10.162	17 35 8.0	41.04	16 12.43	68.20	15 46.10	0.305
Sat.	12	15 11 47.13	10.197	17 51 24.0	40.27	16 12.65	68.32	15 38.33	0.340
Sun.	13	15 15 52.31	10.232	18 7 21.4	39.48	16 12.87	68.44	15 29.74	0.375
Mon.	14	15 19 58.33	10.267	18 22 59.7	38.68	16 13.09	68.56	15 20.30	0.410
Tues.	15	15 24 5.20	10.302	18 38 18.5	37.86	16 13.30	68.68	15 10.02	0.446
Wed.	16	15 28 12.91	10.337	18 53 17.6	37.03	16 13.50	68.79	14 58.89	0.481
Thur.	17	15 32 21.48	10.372	19 7 56.5	36.18	16 13.69	68.91	14 46.91	0.517
Fri.	18	15 36 30.89	10.407	19 22 14.9	35.31	16 13.88	69.03	14 34.09	0.552
Sat.	19	15 40 41.15	10.442	19 36 12.3	34.42	16 14.07	69.14	14 20.42	0.587
Sun.	20	15 44 52.24	10.477	19 49 48.4	33.52	16 14.26	69.25	14 5.93	0.622
Mon.	21	15 49 4.16	10.511	20 3 2.9	32.62	16 14.45	69.36	13 50.61	0.656
Tues.	22	15 53 16.90	10.545	20 15 55.4	31.70	16 14.63	69.47	13 34.47	0.690
Wed.	23	15 57 30.45	10.579	20 28 25.4	30.76	16 14.81	69.58	13 17.51	0.723
Thur.	24	16 1 44.80	10.612	20 40 32.6	29.81	16 14.98	69.68	12 59.77	0.755
Fri.	25	16 5 59.93	10.644	20 52 16.8	28.84	16 15.15	69.78	12 41.25	0.787
Sat.	26	16 10 15.82	10.675	21 3 37.6	27.86	16 15.32	69.88	12 21.97	0.818
Sun.	27	16 14 32.44	10.705	21 14 34.7	26.86	16 15.48	69.98	12 1.96	0.848
Mon.	28	16 18 49.79	10.734	21 25 7.8	25.85	16 15.64	70.08	11 41.23	0.877
Tues.	29	16 23 7.84	10.763	21 35 16.3	24.83	16 15.80	70.17	11 19.79	0.906
Wed.	30	16 27 26.56	10.790	21 45 0.2	23.80	16 15.96	70.26	10 57.69	0.933
Thur.	31	16 31 45.93	10.817	S. 21 54 19.1	22.75	16 16.11	70.35	10 34.93	0.960

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	14 27 47.76	9.822	S.14 37 1.9	47.81	16 18.18	0.034	14 44 5.94
Wed.	2	14 31 43.87	9.855	14 56 2.5	47.21	16 18.63	0.001	14 48 2.50
Thur.	3	14 35 40.79	9.889	15 14 48.4	46.60	16 18.26	0.032	14 51 59.05
Fri.	4	14 39 38.52	9.922	15 33 19.2	45.96	16 17.09	0.065	14 55 55.61
Sat.	5	14 43 37.05	9.956	15 51 34.6	45.31	16 15.11	0.099	14 59 52.16
Sun.	6	14 47 36.39	9.990	16 9 34.0	44.64	16 12.33	0.133	15 3 48.72
Mon.	7	14 51 36.55	10.024	16 27 17.1	43.95	16 8.72	0.167	15 7 45.27
Tues.	8	14 55 37.53	10.058	16 44 43.5	43.25	16 4.29	0.201	15 11 41.82
Wed.	9	14 59 39.34	10.093	17 1 52.9	42.53	15 59.04	0.236	15 15 38.38
Thur.	10	15 3 41.99	10.127	17 18 44.8	41.79	15 52.94	0.270	15 19 34.93
Fri.	11	15 7 45.47	10.162	17 35 18.8	41.04	15 46.02	0.305	15 23 31.49
Sat.	12	15 11 49.79	10.197	17 51 34.5	40.27	15 38.25	0.340	15 27 28.04
Sun.	13	15 15 54.95	10.232	18 7 31.6	39.48	15 29.65	0.375	15 31 24.60
Mon.	14	15 20 0.95	10.267	18 23 9.6	38.68	15 20.20	0.410	15 35 21.15
Tues.	15	15 24 7.80	10.302	18 38 28.1	37.86	15 9.91	0.446	15 39 17.71
Wed.	16	15 28 15.49	10.337	18 53 26.8	37.03	14 58.77	0.481	15 43 14.26
Thur.	17	15 32 24.03	10.372	19 8 5.4	36.18	14 46.79	0.517	15 47 10.82
Fri.	18	15 36 33.41	10.407	19 22 23.5	35.31	14 33.97	0.552	15 51 7.38
Sat.	19	15 40 43.64	10.442	19 36 20.6	34.42	14 20.29	0.587	15 55 3.93
Sun.	20	15 44 54.70	10.477	19 49 56.3	33.52	14 5.79	0.622	15 59 0.49
Mon.	21	15 49 6.58	10.511	20 3 10.4	32.62	13 50.46	0.656	16 2 57.04
Tues.	22	15 53 19.28	10.545	20 16 2.6	31.70	13 34.32	0.690	16 6 53.60
Wed.	23	15 57 32.79	10.579	20 28 32.3	30.76	13 17.36	0.723	16 10 50.15
Thur.	24	16 1 47.10	10.612	20 40 39.2	29.81	12 59.61	0.755	16 14 46.71
Fri.	25	16 6 2.18	10.644	20 52 23.0	28.84	12 41.09	0.787	16 18 43.27
Sat.	26	16 10 18.02	10.675	21 3 43.4	27.86	12 21.80	0.818	16 22 39.82
Sun.	27	16 14 34.59	10.705	21 14 40.1	26.86	12 1.79	0.848	16 26 36.38
Mon.	28	16 18 51.88	10.734	21 25 12.8	25.85	11 41.06	0.877	16 30 32.94
Tues.	29	16 23 9.87	10.763	21 35 21.0	24.83	11 19.62	0.906	16 34 29.49
Wed.	30	16 27 28.53	10.790	21 45 4.6	23.80	10 57.52	0.933	16 38 26.05
Thur.	31	16 31 47.84	10.817	S.21 54 23.2	22.75	10 34.76	0.960	16 42 22.60

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	306	219 21 14.6	20 22.8	150.36	+0.36	9.9963930	46.7	9 14 22.99
2	307	220 21 24.2	20 32.3	150.43	0.48	.9962810	46.5	9 10 27.08
3	308	221 21 35.4	20 43.4	150.50	0.57	.9961695	46.2	9 6 31.17
4	309	222 21 48.2	20 56.1	150.57	0.63	.9960589	45.9	9 2 35.26
5	310	223 22 2.6	21 10.4	150.63	0.67	.9959491	45.5	8 58 39.35
6	311	224 22 18.5	21 26.1	150.69	0.67	.9958403	45.0	8 54 43.44
7	312	225 22 35.7	21 43.2	150.75	0.64	.9957327	44.5	8 50 47.53
8	313	226 22 54.4	22 1.8	150.82	0.58	.9956265	43.9	8 46 51.62
9	314	227 23 14.6	22 21.9	150.88	0.50	.9955218	43.2	8 42 55.71
10	315	228 23 36.2	22 43.4	150.94	0.40	.9954186	42.5	8 38 59.81
11	316	229 23 59.2	23 6.2	151.00	0.29	.9953173	41.8	8 35 3.90
12	317	230 24 23.8	23 30.7	151.06	0.17	.9952178	41.0	8 31 7.99
13	318	231 24 49.9	23 56.7	151.12	+0.04	.9951203	40.1	8 27 12.08
14	319	232 25 17.6	24 24.3	151.19	—0.09	.9950249	39.3	8 23 16.17
15	320	233 25 46.9	24 53.4	151.25	0.21	.9949316	38.4	8 19 20.27
16	321	234 26 17.8	25 24.1	151.32	0.31	.9948402	37.6	8 15 24.36
17	322	235 26 50.3	25 56.5	151.39	0.39	.9947509	36.7	8 11 28.45
18	323	236 27 24.6	26 30.7	151.46	0.44	.9946637	35.9	8 7 32.54
19	324	237 28 0.6	27 6.6	151.53	0.46	.9945785	35.1	8 3 36.63
20	325	238 28 38.3	27 44.1	151.60	0.45	.9944952	34.3	7 59 40.72
21	326	239 29 17.7	28 23.3	151.67	0.41	.9944137	33.6	7 55 44.81
22	327	240 29 58.8	29 4.3	151.74	0.34	.9943338	32.9	7 51 48.90
23	328	241 30 41.6	29 47.0	151.81	0.24	.9942555	32.3	7 47 52.99
24	329	242 31 26.0	30 31.3	151.88	0.13	.9941787	31.7	7 43 57.08
25	330	243 32 12.0	31 17.1	151.95	—0.00	.9941032	31.1	7 40 1.17
26	331	244 32 59.5	32 4.4	152.01	+0.13	.9940292	30.5	7 36 5.26
27	332	245 33 48.4	32 53.2	152.07	0.26	.9939565	30.0	7 32 9.35
28	333	246 34 38.6	33 43.3	152.12	0.39	.9938850	29.5	7 28 13.44
29	334	247 35 29.9	34 34.4	152.16	0.50	.9938147	29.0	7 24 17.53
30	335	248 36 22.4	35 26.7	152.21	0.59	.9937457	28.5	7 20 21.62
31	336	249 37 16.0	36 20.1	152.25	+0.67	9.9936779	27.9	7 16 25.71

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 22.2	15 26.2	56 18.0	+1.21	56 32.6	+1.22	1 15.4	2.17	1.9
2	15 30.2	15 34.2	56 47.3	1.22	57 2.0	1.23	2 8.1	2.22	2.9
3	15 38.2	15 42.3	57 16.8	1.23	57 31.6	1.23	3 2.1	2.26	3.9
4	15 46.3	15 50.3	57 46.4	1.22	58 1.0	1.22	3 56.6	2.26	4.9
5	15 54.3	15 58.2	58 15.6	1.20	58 29.9	1.18	4 50.7	2.24	5.9
6	16 2.0	16 5.7	58 43.9	1.14	58 57.4	1.09	5 44.2	2.21	6.9
7	16 9.1	16 12.3	59 10.2	1.02	59 22.0	0.93	6 36.9	2.18	7.9
8	16 15.2	16 17.6	59 32.6	0.82	59 41.7	0.68	7 29.0	2.18	8.9
9	16 19.6	16 21.1	59 49.0	0.51	59 54.1	+0.32	8 21.3	2.19	9.9
10	16 21.8	16 21.8	59 56.6	+0.10	59 56.5	−0.13	9 14.3	2.23	10.9
11	16 21.0	16 19.3	59 53.6	−0.37	59 47.5	0.63	10 8.5	2.28	11.9
12	16 16.8	16 13.5	59 38.5	0.88	59 26.4	1.12	11 3.9	2.33	12.9
13	16 9.5	16 4.8	59 11.5	1.34	58 54.2	1.54	12 0.4	2.36	13.9
14	15 59.4	15 53.6	58 34.6	1.70	58 13.4	1.83	12 57.0	2.34	14.9
15	15 47.5	15 41.1	57 50.8	1.91	57 27.4	1.96	13 52.6	2.28	15.9
16	15 34.7	15 28.3	57 3.7	1.98	56 40.2	1.93	14 46.2	2.18	16.9
17	15 22.1	15 16.1	56 17.4	1.86	55 55.6	1.76	15 37.0	2.06	17.9
18	15 10.6	15 5.5	55 35.2	1.62	55 16.6	1.47	16 25.1	1.95	18.9
19	15 1.0	14 57.1	55 0.1	1.29	54 45.8	1.09	17 10.6	1.85	19.9
20	14 53.9	14 51.4	54 33.9	0.88	54 24.6	0.67	17 54.1	1.78	20.9
21	14 49.5	14 48.4	54 17.9	0.45	54 13.9	−0.23	18 36.4	1.75	21.9
22	14 48.0	14 48.3	54 12.4	−0.01	54 13.6	+0.20	19 18.3	1.75	22.9
23	14 49.4	14 51.0	54 17.2	+0.41	54 23.3	0.60	20 0.5	1.78	23.9
24	14 53.3	14 56.1	54 31.6	0.78	54 42.0	0.94	20 43.9	1.85	24.9
25	14 59.4	15 3.2	54 54.2	1.09	55 8.0	1.21	21 29.3	1.94	25.9
26	15 7.3	15 11.8	55 23.2	1.31	55 39.5	1.39	22 17.1	2.05	26.9
27	15 16.4	15 21.2	55 56.5	1.44	56 14.0	1.47	23 7.6	2.15	27.9
28	15 26.0	15 30.7	56 31.7	1.47	56 49.2	1.45	☌		28.9
29	15 35.4	15 39.9	57 6.3	1.41	57 22.8	1.34	0 0.6	2.24	0.2
30	15 44.2	15 48.1	57 38.5	1.26	57 53.1	1.17	0 55.4	2.30	1.2
31	15 51.8	15 55.1	58 6.6	+1.07	58 18.8	+0.96	1 51.1	2.31	2.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 56 52.00	2.2460	S. 18 26 47.8	3.836
1	15 59 6.84	2.2489	18 30 35.1	3.740
2	16 1 21.86	2.2520	18 34 16.5	3.643
3	16 3 37.07	2.2551	18 37 51.9	3.545
4	16 5 52.48	2.2582	18 41 21.6	3.445
5	16 8 8.06	2.2612	18 44 45.3	3.345
6	16 10 23.81	2.2641	18 48 3.0	3.245
7	16 12 39.75	2.2670	18 51 14.7	3.145
8	16 14 55.86	2.2699	18 54 20.3	3.044
9	16 17 12.14	2.2728	18 57 19.8	2.942
10	16 19 28.60	2.2757	19 0 13.3	2.840
11	16 21 45.22	2.2784	19 3 0.6	2.738
12	16 24 2.00	2.2810	19 5 41.8	2.635
13	16 26 18.94	2.2835	19 8 16.8	2.532
14	16 28 36.03	2.2861	19 10 45.5	2.428
15	16 30 53.28	2.2888	19 13 7.9	2.323
16	16 33 10.70	2.2914	19 15 24.0	2.217
17	16 35 28.26	2.2939	19 17 33.8	2.111
18	16 37 45.96	2.2964	19 19 37.1	2.005
19	16 40 3.82	2.2989	19 21 34.2	1.898
20	16 42 21.82	2.3012	19 23 24.8	1.791
21	16 44 39.95	2.3035	19 25 8.9	1.683
22	16 46 58.23	2.3056	19 26 46.6	1.575
23	16 49 16.64	2.3079	S. 19 28 17.8	1.467

WEDNESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 51 35.17	2.3100	S. 19 29 42.3	1.358
1	16 53 53.83	2.3120	19 31 0.4	1.247
2	16 56 12.61	2.3140	19 32 11.9	1.137
3	16 58 31.50	2.3160	19 33 16.8	1.027
4	17 0 50.53	2.3180	19 34 15.1	0.917
5	17 3 9.67	2.3199	19 35 6.8	0.807
6	17 5 28.92	2.3217	19 35 51.9	0.696
7	17 7 48.28	2.3235	19 36 30.2	0.585
8	17 10 7.74	2.3253	19 37 1.8	0.474
9	17 12 27.31	2.3270	19 37 26.8	0.363
10	17 14 46.99	2.3287	19 37 45.4	0.252
11	17 17 6.76	2.3303	19 37 57.2	0.140
12	17 19 26.63	2.3318	19 38 2.1	0.027
13	17 21 46.58	2.3332	19 38 0.2	0.086
14	17 24 6.61	2.3346	19 37 51.5	0.201
15	17 26 26.73	2.3360	19 37 36.1	0.314
16	17 28 46.94	2.3373	19 37 13.9	0.427
17	17 31 7.22	2.3386	19 36 44.9	0.540
18	17 33 27.56	2.3398	19 36 9.0	0.653
19	17 35 47.99	2.3410	19 35 26.4	0.767
20	17 38 8.48	2.3419	19 34 36.9	0.880
21	17 40 29.03	2.3427	19 33 40.6	0.994
22	17 42 49.64	2.3435	19 32 37.5	1.108
23	17 45 10.30	2.3445	19 31 27.3	1.222
24	17 47 31.01	2.3455	S. 19 30 10.5	1.336

THURSDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 47 31.01	2.3455	S. 19 30 10.5	1.336
1	17 49 51.78	2.3466	19 28 46.9	1.450
2	17 52 12.59	2.3473	19 27 16.4	1.564
3	17 54 33.44	2.3480	19 25 39.0	1.678
4	17 56 54.35	2.3487	19 23 54.8	1.793
5	17 59 15.29	2.3493	19 22 3.7	1.908
6	18 1 36.25	2.3498	19 20 5.6	2.023
7	18 3 57.26	2.3503	19 18 0.8	2.138
8	18 6 18.29	2.3507	19 15 49.1	2.253
9	18 8 39.35	2.3511	19 13 30.5	2.368
10	18 11 0.44	2.3515	19 11 5.0	2.482
11	18 13 21.54	2.3518	19 8 32.7	2.596
12	18 15 42.66	2.3520	19 5 53.6	2.709
13	18 18 3.79	2.3522	19 3 7.7	2.823
14	18 20 24.92	2.3523	19 0 15.0	2.936
15	18 22 46.06	2.3524	18 57 15.6	3.049
16	18 25 7.21	2.3525	18 54 9.2	3.162
17	18 27 28.36	2.3525	18 50 56.1	3.275
18	18 29 49.50	2.3524	18 47 36.4	3.388
19	18 32 10.65	2.3523	18 44 9.8	3.500
20	18 34 31.79	2.3522	18 40 36.5	3.613
21	18 36 52.91	2.3520	18 36 56.5	3.725
22	18 39 14.03	2.3518	18 33 9.6	3.837
23	18 41 35.13	2.3515	S. 18 29 16.1	3.948

FRIDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 43 56.20	2.3512	S. 18 25 16.0	4.058
1	18 46 17.26	2.3508	18 21 9.2	4.168
2	18 48 38.29	2.3503	18 16 55.8	4.278
3	18 50 59.30	2.3498	18 12 35.9	4.388
4	18 53 20.27	2.3493	18 8 9.3	4.498
5	18 55 41.21	2.3488	18 3 36.1	4.608
6	18 58 2.13	2.3483	17 58 56.3	4 718
7	19 0 23.01	2.3477	17 54 9.9	4.827
8	19 2 43.85	2.3471	17 49 17.0	4.935
9	19 5 4.65	2.3464	17 44 17.7	5.043
10	19 7 25.41	2.3457	17 39 11.9	5.150
11	19 9 46.12	2.3449	17 33 59.7	5.256
12	19 12 6.79	2.3441	17 28 41.0	5.362
13	19 14 27.40	2.3432	17 23 16.0	5.468
14	19 16 47.96	2.3423	17 17 44.7	5.575
15	19 19 8.48	2.3414	17 12 7.1	5.681
16	19 21 28.94	2.3405	17 6 23.0	5.787
17	19 23 49.34	2.3396	17 0 32.7	5.891
18	19 26 9.68	2.3387	16 54 36.3	5.994
19	19 28 29.97	2.3377	16 48 33.5	6.097
20	19 30 50.20	2.3367	16 42 24.6	6.200
21	19 33 10.36	2.3357	16 36 9.6	6.303
22	19 35 30.47	2.3347	16 29 48.3	6.405
23	19 37 50.51	2.3336	16 23 21.0	6.506
24	19 40 10.48	2.3325	S. 16 16 47.7	6.605

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 5.					MONDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	19 40 10.48	2.3325	S. 16 16 47.7	6.606	0	21 30 41.23	2.2742	S. 9 17 55.5	10.529
1	19 42 30.39	2.3313	16 10 8.4	6.703	1	21 32 57.65	2.2733	9 7 22.0	10.587
2	19 44 50.23	2.3301	16 3 23.2	6.802	2	21 35 14.02	2.2724	8 56 45.0	10.646
3	19 47 9.99	2.3289	15 56 32.1	6.901	3	21 37 30.34	2.2715	8 46 4.5	10.705
4	19 49 29.68	2.3277	15 49 35.0	7.000	4	21 39 46.61	2.2707	8 35 20.3	10.763
5	19 51 49.30	2.3266	15 42 32.1	7.097	5	21 42 2.83	2.2699	8 24 32.9	10.819
6	19 54 8.84	2.3253	15 35 23.4	7.193	6	21 44 18.99	2.2691	8 13 42.2	10.874
7	19 56 28.32	2.3240	15 28 8.9	7.288	7	21 46 35.11	2.2683	8 2 48.3	10.927
8	19 58 47.72	2.3228	15 20 48.7	7.383	8	21 48 51.19	2.2676	7 51 51.2	10.979
9	20 1 7.04	2.3215	15 13 22.8	7.478	9	21 51 7.22	2.2669	7 40 51.1	11.030
10	20 3 26.29	2.3202	15 5 51.2	7.573	10	21 53 23.21	2.2663	7 29 47.7	11.080
11	20 5 45.46	2.3189	14 58 14.0	7.666	11	21 55 39.17	2.2657	7 18 41.5	11.129
12	20 8 4.55	2.3176	14 50 31.2	7.758	12	21 57 55.11	2.2652	7 7 32.4	11.177
13	20 10 23.57	2.3163	14 42 43.0	7.848	13	22 0 11.00	2.2647	6 56 20.2	11.225
14	20 12 42.51	2.3151	14 34 49.4	7.938	14	22 2 26.86	2.2641	6 45 5.4	11.270
15	20 15 1.38	2.3138	14 26 50.3	8.028	15	22 4 42.69	2.2636	6 33 48.1	11.314
16	20 17 20.17	2.3125	14 18 45.8	8.118	16	22 6 58.48	2.2631	6 22 27.9	11.357
17	20 19 38.88	2.3112	14 10 36.0	8.207	17	22 9 14.25	2.2627	6 11 5.2	11.399
18	20 21 57.50	2.3099	14 2 20.8	8.296	18	22 11 30.01	2.2623	5 59 39.9	11.441
19	20 24 16.05	2.3085	13 54 0.3	8.383	19	22 13 45.74	2.2620	5 48 12.1	11.482
20	20 26 34.52	2.3072	13 45 34.7	8.470	20	22 16 1.45	2.2617	5 36 42.0	11.522
21	20 28 52.90	2.3059	13 37 4.0	8.556	21	22 18 17.13	2.2614	5 25 9.5	11.562
22	20 31 11.21	2.3045	13 28 28.0	8.640	22	22 20 32.80	2.2612	5 13 34.5	11.600
23	20 33 29.44	2.3032	S. 13 19 47.1	8.723	23	22 22 48.46	2.2609	S. 5 1 57.5	11.636
	SUNDAY 6.					TUESDAY 8.			
0	20 35 47.58	2.3020	S. 13 11 1.3	8.806	0	22 25 4.11	2.2607	S. 4 50 18.6	11.669
1	20 38 5.66	2.3007	13 2 10.4	8.888	1	22 27 19.74	2.2605	4 38 37.5	11.700
2	20 40 23.66	2.2994	12 53 14.7	8.968	2	22 29 35.37	2.2604	4 26 54.6	11.732
3	20 42 41.58	2.2981	12 44 14.2	9.048	3	22 31 51.01	2.2604	4 15 9.8	11.764
4	20 44 59.42	2.2967	12 35 8.8	9.128	4	22 34 6.63	2.2605	4 3 22.9	11.795
5	20 47 17.18	2.2954	12 25 58.7	9.207	5	22 36 22.26	2.2605	3 51 34.4	11.824
6	20 49 34.87	2.2942	12 16 43.8	9.285	6	22 38 37.89	2.2606	3 39 44.2	11.852
7	20 51 52.48	2.2930	12 7 24.2	9.363	7	22 40 53.53	2.2607	3 27 52.3	11.878
8	20 54 10.02	2.2917	11 58 0.1	9.439	8	22 43 9.18	2.2609	3 15 58.9	11.903
9	20 56 27.48	2.2905	11 48 31.5	9.515	9	22 45 24.83	2.2611	3 4 4.0	11.928
10	20 58 44.87	2.2893	11 38 58.2	9.590	10	22 47 40.50	2.2613	2 52 7.5	11.952
11	21 1 2.19	2.2881	11 29 20.6	9.663	11	22 49 56.19	2.2615	2 40 9.8	11.972
12	21 3 19.43	2.2869	11 19 38.8	9.734	12	22 52 11.89	2.2617	2 28 11.0	11.990
13	21 5 36.61	2.2858	11 9 52.6	9.805	13	22 54 27.60	2.2620	2 16 11.0	12.008
14	21 7 53.72	2.2846	11 0 2.2	9.875	14	22 56 43.34	2.2624	2 4 10.0	12.027
15	21 10 10.77	2.2834	10 50 7.6	9.945	15	22 58 59.12	2.2628	1 52 7.9	12.045
16	21 12 27.74	2.2823	10 40 8.7	10.015	16	23 1 14.91	2.2633	1 40 4.5	12.062
17	21 14 44.65	2.2812	10 30 5.8	10.083	17	23 3 30.73	2.2638	1 28 0.4	12.076
18	21 17 1.49	2.2801	10 19 58.9	10.150	18	23 5 46.58	2.2644	1 15 55.6	12.089
19	21 19 18.26	2.2790	10 9 47.9	10.215	19	23 8 2.46	2.2650	1 3 49.9	12.100
20	21 21 34.97	2.2780	9 59 33.1	10.279	20	23 10 18.38	2.2656	0 51 43.6	12.110
21	21 23 51.63	2.2770	9 49 14.4	10.344	21	23 12 34.33	2.2662	0 39 36.9	12.119
22	21 26 8.21	2.2760	9 38 51.7	10.408	22	23 14 50.32	2.2668	0 27 29.3	12.128
23	21 28 24.74	2.2751	9 28 25.4	10.470	23	23 17 6.36	2.2675	0 15 21.5	12.135
24	21 30 41.23	2.2742	S. 9 17 55.5	10.529	24	23 19 22.45	2.2684	S. 0 3 13.4	12.139

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 9.					FRIDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 19 22.45	2.2684	S. 0 3 13.4	12.139	0	1 9 48.69	2.3439	N. 9 20 33.5	10.839
1	23 21 38.57	2.2692	N. 0 8 55.1	12.142	1	1 12 9.38	2.3460	9 31 22.1	10.778
2	23 23 54.75	2.2701	0 21 3.7	12.145	2	1 14 30.20	2.3480	9 42 6.9	10.717
3	23 26 10.99	2.2710	0 33 12.4	12.147	3	1 16 51.14	2.3501	9 52 48.0	10.656
4	23 28 27.28	2.2720	0 45 21.3	12.148	4	1 19 12.21	2.3522	10 3 25.5	10.592
5	23 30 43.63	2.2729	0 57 30.1	12.147	5	1 21 33.41	2.3543	10 13 59.0	10.527
6	23 33 0.03	2.2738	1 9 38.7	12.145	6	1 23 54.73	2.3564	10 24 28.6	10.461
7	23 35 16.49	2.2748	1 21 47.4	12.142	7	1 26 16.18	2.3585	10 34 54.4	10.395
8	23 37 33.02	2.2759	1 33 55.7	12.137	8	1 28 37.76	2.3606	10 45 16.0	10.328
9	23 39 49.61	2.2771	1 46 3.5	12.130	9	1 30 59.46	2.3627	10 55 33.3	10.259
10	23 42 6.27	2.2783	1 58 11.1	12.122	10	1 33 21.29	2.3648	11 5 46.7	10.187
11	23 44 23.01	2.2795	2 10 18.0	12.112	11	1 35 43.25	2.3669	11 15 55.6	10.113
12	23 46 39.82	2.2807	2 22 24.3	12.101	12	1 38 5.33	2.3690	11 26 0.1	10.038
13	23 48 56.70	2.2820	2 34 30.1	12.090	13	1 40 27.54	2.3711	11 36 0.2	9.963
14	23 51 13.66	2.2832	2 46 35.0	12.077	14	1 42 49.87	2.3732	11 45 55.6	9.887
15	23 53 30.71	2.2845	2 58 39.3	12.063	15	1 45 12.32	2.3753	11 55 46.4	9.810
16	23 55 47.82	2.2858	3 10 42.6	12.048	16	1 47 34.90	2.3773	12 5 32.8	9.733
17	23 58 5.02	2.2872	3 22 44.9	12.032	17	1 49 57.60	2.3794	12 15 14.3	9.653
18	0 0 22.31	2.2887	3 34 46.3	12.014	18	1 52 20.43	2.3815	12 24 51.0	9.572
19	0 2 39.68	2.2902	3 46 46.5	11.995	19	1 54 43.38	2.3835	12 34 22.7	9.490
20	0 4 57.14	2.2917	3 58 45.5	11.974	20	1 57 6.45	2.3855	12 43 49.5	9.408
21	0 7 14.69	2.2932	4 10 43.2	11.952	21	1 59 29.64	2.3875	12 53 11.3	9.326
22	0 9 32.33	2.2948	4 22 39.6	11.930	22	2 1 52.95	2.3895	13 2 28.2	9.238
23	0 11 50.07	2.2964	N. 4 34 34.5	11.906	23	2 4 16.38	2.3915	N.13 11 39.8	9.150
	THURSDAY 10.					SATURDAY 12.			
0	0 14 7.91	2.2981	N. 4 46 27.6	11.877	0	2 6 39.93	2.3936	N.13 20 46.2	9.062
1	0 16 25.85	2.2998	4 58 19.3	11.847	1	2 9 3.60	2.3956	13 29 47.4	8.973
2	0 18 43.89	2.3015	5 10 9.1	11.817	2	2 11 27.38	2.3974	13 38 43.0	8.882
3	0 21 2.02	2.3032	5 21 57.1	11.787	3	2 13 51.26	2.3992	13 47 33.2	8.791
4	0 23 20.25	2.3047	5 33 43.4	11.757	4	2 16 15.27	2.4010	13 56 17.9	8.700
5	0 25 38.59	2.3065	5 45 27.7	11.724	5	2 18 39.38	2.4027	14 4 57.0	8.608
6	0 27 57.04	2.3083	5 57 9.9	11.689	6	2 21 3.58	2.4044	14 13 30.6	8.516
7	0 30 15.60	2.3102	6 8 50.2	11.653	7	2 23 27.89	2.4060	14 21 58.7	8.423
8	0 32 34.27	2.3120	6 20 28.2	11.616	8	2 25 52.30	2.4076	14 30 21.1	8.327
9	0 34 53.04	2.3138	6 32 4.0	11.578	9	2 28 16.82	2.4092	14 38 37.6	8.228
10	0 37 11.92	2.3157	6 43 37.6	11.538	10	2 30 41.43	2.4108	14 46 48.3	8.128
11	0 39 30.92	2.3175	6 55 8.6	11.496	11	2 33 6.13	2.4124	14 54 53.0	8.029
12	0 41 50.03	2.3194	7 6 37.0	11.453	12	2 35 30.93	2.4140	15 2 51.6	7.929
13	0 44 9.25	2.3213	7 18 2.9	11.408	13	2 37 55.82	2.4155	15 10 44.3	7.830
14	0 46 28.59	2.3233	7 29 26.0	11.363	14	2 40 20.80	2.4170	15 18 30.9	7.728
15	0 48 48.06	2.3253	7 40 46.5	11.318	15	2 42 45.88	2.4185	15 26 11.3	7.624
16	0 51 7.64	2.3273	7 52 4.1	11.272	16	2 45 11.04	2.4200	15 33 45.6	7.520
17	0 53 27.34	2.3293	8 3 18.8	11.224	17	2 47 36.28	2.4213	15 41 13.6	7.416
18	0 55 47.16	2.3314	8 14 30.4	11.173	18	2 50 1.60	2.4226	15 48 35.4	7.310
19	0 58 7.11	2.3335	8 25 39.2	11.120	19	2 52 27.00	2.4238	15 55 50.9	7.205
20	1 0 27.18	2.3356	8 36 44.7	11.067	20	2 54 52.47	2.4250	16 3 0.0	7.098
21	1 2 47.36	2.3376	8 47 46.8	11.013	21	2 57 18.02	2.4262	16 10 2.6	6.991
22	1 5 7.67	2.3397	8 58 46.0	10.957	22	2 59 43.63	2.4273	16 16 58.9	6.883
23	1 7 28.11	2.3418	9 9 41.6	10.899	23	3 2 9.30	2.4284	16 23 48.6	6.775
24	1 9 48.69	2.3439	N. 9 20 33.5	10.839	24	3 4 35.04	2.4293	N.16 30 31.8	6.664

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 13.			
	h m s	s	° ′ ″	″
0	3 4 35.04	2.4293	N.16 30 31.8	6.664
1	3 7 0.83	2.4302	16 37 8.3	6.553
2	3 9 26.67	2.4311	16 43 38.1	6.441
3	3 11 52.56	2.4320	16 50 1.3	6.329
4	3 14 18.51	2.4328	16 56 17.7	6.217
5	3 16 44.50	2.4335	17 2 27.3	6.104
6	3 19 10.52	2.4342	17 8 30.1	5.990
7	3 21 36.60	2.4348	17 14 26.0	5.875
8	3 24 2.71	2.4353	17 20 15.1	5.761
9	3 26 28.84	2.4358	17 25 57.3	5.646
10	3 28 55.02	2.4363	17 31 32.6	5.530
11	3 31 21.21	2.4366	17 37 0.9	5.414
12	3 33 47.41	2.4368	17 42 22.3	5.298
13	3 36 13.63	2.4370	17 47 36.7	5.181
14	3 38 39.85	2.4371	17 52 44.0	5.063
15	3 41 6.08	2.4372	17 57 44.2	4.944
16	3 43 32.33	2.4372	18 2 37.2	4.823
17	3 45 58.57	2.4372	18 7 23.0	4.703
18	3 48 24.79	2.4371	18 12 1.7	4.584
19	3 50 51.02	2.4370	18 16 33.2	4.465
20	3 53 17.23	2.4368	18 20 57.5	4.345
21	3 55 43.42	2.4365	18 25 14.6	4.225
22	3 58 9.59	2.4360	18 29 24.5	4.105
23	4 0 35.73	2.4354	N.18 33 27.2	3.984
	MONDAY 14.			
0	4 3 1.84	2.4347	N.18 37 22.6	3.863
1	4 5 27.90	2.4340	18 41 10.7	3.742
2	4 7 53.92	2.4334	18 44 51.6	3.621
3	4 10 19.91	2.4327	18 48 25.3	3.500
4	4 12 45.86	2.4320	18 51 51.6	3.378
5	4 15 11.75	2.4312	18 55 10.6	3.256
6	4 17 37.58	2.4303	18 58 22.3	3.134
7	4 20 3.36	2.4292	19 1 26.6	3.012
8	4 22 29.07	2.4281	19 4 23.6	2.890
9	4 24 54.71	2.4269	19 7 13.2	2.768
10	4 27 20.28	2.4257	19 9 55.5	2.645
11	4 29 45.77	2.4244	19 12 30.5	2.523
12	4 32 11.17	2.4229	19 14 58.2	2.401
13	4 34 36.49	2.4212	19 17 18.7	2.280
14	4 37 1.71	2.4196	19 19 31.9	2.158
15	4 39 26.82	2.4180	19 21 37.7	2.036
16	4 41 51.85	2.4163	19 23 36.1	1.915
17	4 44 16.77	2.4145	19 25 27.2	1.793
18	4 46 41.57	2.4126	19 27 11.0	1.671
19	4 49 6.27	2.4107	19 28 47.6	1.550
20	4 51 30.84	2.4086	19 30 16.9	1.429
21	4 53 55.29	2.4066	19 31 39.0	1.308
22	4 56 19.62	2.4043	19 32 53.8	1.187
23	4 58 43.81	2.4021	19 34 1.3	1.067
24	5 1 7.85	2.3998	N.19 35 1.3	0.947

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 15.			
	h m s	s	° ′ ″	″
0	5 1 7.85	2.3998	N.19 35 1.3	0.947
1	5 3 31.77	2.3976	19 35 54.5	0.827
2	5 5 55.54	2.3950	19 36 40.5	0.707
3	5 8 19.15	2.3924	19 37 19.3	0.587
4	5 10 42.62	2.3898	19 37 50.9	0.468
5	5 13 5.93	2.3872	19 38 15.4	0.349
6	5 15 29.09	2.3846	19 38 32.8	0.230
7	5 17 52.09	2.3818	19 38 43.0	0.112
8	5 20 14.91	2.3790	19 38 46.2	0.005
9	5 22 37.56	2.3762	19 38 42.5	0.122
10	5 25 0.05	2.3733	19 38 31.6	0.238
11	5 27 22.35	2.3703	19 38 13.8	0.354
12	5 29 44.46	2.3672	19 37 49.2	0.470
13	5 32 6.39	2.3639	19 37 17.5	0.585
14	5 34 28.12	2.3606	19 36 39.0	0.699
15	5 36 49.66	2.3574	19 35 53.8	0.813
16	5 39 11.01	2.3541	19 35 1.5	0.927
17	5 41 32.16	2.3507	19 34 2.5	1.039
18	5 43 53.10	2.3473	19 32 56.9	1.151
19	5 46 13.84	2.3439	19 31 44.4	1.263
20	5 48 34.37	2.3405	19 30 25.2	1.375
21	5 50 54.70	2.3371	19 28 59.3	1.487
22	5 53 14.83	2.3336	19 27 26.7	1.598
23	5 55 34.74	2.3299	N.19 25 47.4	1.708
	WEDNESDAY 16.			
0	5 57 54.42	2.3260	N.19 24 1.6	1.816
1	6 0 13.87	2.3222	19 22 9.4	1.923
2	6 2 33.09	2.3184	19 20 10.8	2.032
3	6 4 52.08	2.3146	19 18 5.7	2.138
4	6 7 10.84	2.3108	19 15 54.2	2.244
5	6 9 29.37	2.3068	19 13 36.4	2.350
6	6 11 47.66	2.3028	19 11 12.2	2.455
7	6 14 5.71	2.2989	19 8 41.8	2.559
8	6 16 23.53	2.2949	19 6 5.1	2.663
9	6 18 41.10	2.2908	19 3 22.2	2.766
10	6 20 58.43	2.2868	19 0 33.2	2.868
11	6 23 15.51	2.2826	18 57 38.0	2.970
12	6 25 32.34	2.2784	18 54 36.8	3.071
13	6 27 48.92	2.2742	18 51 29.6	3.170
14	6 30 5.25	2.2700	18 48 16.4	3.268
15	6 32 21.32	2.2658	18 44 57.3	3.367
16	6 34 37.14	2.2615	18 41 32.3	3.466
17	6 36 52.70	2.2572	18 38 1.4	3.563
18	6 39 8.00	2.2528	18 34 24.8	3.659
19	6 41 23.04	2.2485	18 30 42.4	3.754
20	6 43 37.82	2.2442	18 26 54.3	3.849
21	6 45 52.34	2.2398	18 23 0.5	3.943
22	6 48 6.59	2.2353	18 19 1.1	4.036
23	6 50 20.58	2.2310	18 14 56.2	4.127
24	6 52 34.31	2.2266	N.18 10 45.8	4.219

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	6 52 34.31	2.2266	N.18 10 45.8	4.219
1	6 54 47.77	2.2221	18 6 29.9	4.310
2	6 57 0.96	2.2176	18 2 8.6	4.400
3	6 59 13.88	2.2132	17 57 41.9	4.489
4	7 1 26.54	2.2087	17 53 9.9	4.577
5	7 3 38.92	2.2041	17 48 32.7	4.664
6	7 5 51.03	2.1997	17 43 50.2	4.751
7	7 8 2.88	2.1952	17 39 2.5	4.837
8	7 10 14.45	2.1907	17 34 9.7	4.923
9	7 12 25.76	2.1861	17 29 11.8	5.007
10	7 14 36.79	2.1816	17 24 8.9	5.090
11	7 16 47.55	2.1771	17 19 1.0	5.172
12	7 18 58.04	2.1726	17 13 48.2	5.254
13	7 21 8.26	2.1681	17 8 30.5	5.335
14	7 23 18.21	2.1636	17 3 8.0	5.415
15	7 25 27.89	2.1591	16 57 40.7	5.494
16	7 27 37.30	2.1546	16 52 8.7	5.572
17	7 29 46.44	2.1501	16 46 32.0	5.650
18	7 31 55.31	2.1456	16 40 50.7	5.727
19	7 34 3.91	2.1411	16 35 4.7	5.804
20	7 36 12.24	2.1366	16 29 14.2	5.879
21	7 38 20.30	2.1321	16 23 19.2	5.954
22	7 40 28.09	2.1277	16 17 19.7	6.028
23	7 42 35.62	2.1232	N.16 11 15.9	6.100

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m	Declination.	Diff. for 1 m.
0	7 44 42.88	2.1187	N.16 5 7.7	6.172
1	7 46 49.87	2.1143	15 58 55.2	6.243
2	7 48 56.60	2.1100	15 52 38.5	6.313
3	7 51 3.07	2.1057	15 46 17.6	6.383
4	7 53 9.28	2.1013	15 39 52.5	6.452
5	7 55 15.22	2.0969	15 33 23.3	6.520
6	7 57 20.90	2.0926	15 26 50.0	6.588
7	7 59 26.33	2.0883	15 20 12.7	6.655
8	8 1 31.50	2.0840	15 13 31.4	6.721
9	8 3 36.41	2.0797	15 6 46.2	6.785
10	8 5 41.06	2.0754	14 59 57.2	6.849
11	8 7 45.46	2.0712	14 53 4.3	6.912
12	8 9 49.61	2.0671	14 46 7.7	6.975
13	8 11 53.51	2.0629	14 39 7.3	7.037
14	8 13 57.16	2.0587	14 32 3.3	7.096
15	8 16 0.56	2.0546	14 24 55.6	7.156
16	8 18 3.71	2.0505	14 17 44.3	7.217
17	8 20 6.62	2.0465	14 10 29.5	7.276
18	8 22 9.29	2.0425	14 3 11.1	7.334
19	8 24 11.72	2.0385	13 55 49.3	7.392
20	8 26 13.91	2.0345	13 48 24.1	7.449
21	8 28 15.86	2.0306	13 40 55.5	7.504
22	8 30 17.58	2.0267	13 33 23.6	7.559
23	8 32 19.06	2.0228	13 25 48.4	7.613
24	8 34 20.31	2.0189	N.13 18 10.0	7.667

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	8 34 20.31	2.0189	N.13 18 10.0	7.667
1	8 36 21.33	2.0151	13 10 28.4	7.720
2	8 38 22.12	2.0113	13 2 43.6	7.772
3	8 40 22.69	2.0076	12 54 55.7	7.823
4	8 42 23.04	2.0040	12 47 4.8	7.874
5	8 44 23.17	2.0003	12 39 10.8	7.925
6	8 46 23.08	1.9967	12 31 13.8	7.974
7	8 48 22.77	1.9931	12 23 13.9	8.022
8	8 50 22.25	1.9896	12 15 11.1	8.070
9	8 52 21.52	1.9861	12 7 5.5	8.117
10	8 54 20.58	1.9826	11 58 57.0	8.164
11	8 56 19.43	1.9791	11 50 45.8	8.210
12	8 58 18.07	1.9757	11 42 31.8	8.256
13	9 0 16.51	1.9724	11 34 15.1	8.300
14	9 2 14.75	1.9691	11 25 55.8	8.343
15	9 4 12.80	1.9659	11 17 33.9	8.386
16	9 6 10.66	1.9627	11 9 9.4	8.429
17	9 8 8.32	1.9595	11 0 42.4	8.472
18	9 10 5.79	1.9563	10 52 12.8	8.513
19	9 12 3.08	1.9532	10 43 40.8	8.554
20	9 14 0.18	1.9502	10 35 6.4	8.593
21	9 15 57.10	1.9472	10 26 29.6	8.632
22	9 17 53.84	1.9442	10 17 50.5	8.671
23	9 19 50.40	1.9413	N.10 9 9.1	8.709

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 21 46.79	1.9384	N.10 0 25.4	8.747
1	9 23 43.01	1.9356	9 51 39.5	8.783
2	9 25 39.06	1.9328	9 42 51.4	8.819
3	9 27 34.95	1.9302	9 34 1.2	8.855
4	9 29 30.68	1.9275	9 25 8.8	8.890
5	9 31 26.25	1.9248	9 16 14.4	8.924
6	9 33 21.66	1.9222	9 7 17.9	8.958
7	9 35 16.92	1.9197	8 58 19.4	8.991
8	9 37 12.02	1.9172	8 49 19.0	9.023
9	9 39 6.98	1.9147	8 40 16.6	9.055
10	9 41 1.79	1.9123	8 31 12.3	9.087
11	9 42 56.46	1.9100	8 22 6.2	9.117
12	9 44 50.99	1.9077	8 12 58.3	9.147
13	9 46 45.38	1.9054	8 3 48.6	9.177
14	9 48 39.64	1.9032	7 54 37.1	9.206
15	9 50 33.77	1.9012	7 45 23.9	9.234
16	9 52 27.78	1.8991	7 36 9.0	9.262
17	9 54 21.66	1.8970	7 26 52.5	9.289
18	9 56 15.42	1.8950	7 17 34.3	9.316
19	9 58 9.06	1.8930	7 8 14.5	9.342
20	10 0 2.58	1.8911	6 58 53.2	9.368
21	10 1 55.99	1.8893	6 49 30.4	9.393
22	10 3 49.29	1.8875	6 40 6.1	9.417
23	10 5 42.49	1.8857	6 30 40.4	9.440
24	10 7 35.58	1.8840	N. 6 21 13.3	9.463

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 21.					WEDNESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 7 35.58	1.8840	N. 6 21 13.3	9.463	0	11 37 4.62	1.8649	S. 1 29 36.9	9.950
1	10 9 28.57	1.8824	6 11 44.8	9.487	1	11 38 56.54	1.8658	1 39 33.8	9.947
2	10 11 21.47	1.8808	6 2 14.9	9.509	2	11 40 48.51	1.8667	1 49 30.5	9.944
3	10 13 14.27	1.8792	5 52 43.7	9.530	3	11 42 40.54	1.8677	1 59 27.0	9.940
4	10 15 6.98	1.8777	5 43 11.3	9.551	4	11 44 32.64	1.8688	2 9 23.3	9.936
5	10 16 59.60	1.8763	5 33 37.6	9.572	5	11 46 24.80	1.8699	2 19 19.3	9.930
6	10 18 52.14	1.8750	5 24 2.7	9.592	6	11 48 17.03	1.8710	2 29 14.9	9.924
7	10 20 44.60	1.8737	5 14 26.6	9.612	7	11 50 9.32	1.8722	2 39 10.2	9.918
8	10 22 36.98	1.8723	5 4 49.3	9.631	8	11 52 1.69	1.8735	2 49 5.1	9.911
9	10 24 29.28	1.8711	4 55 10.9	9.649	9	11 53 54.14	1.8748	2 58 59.5	9.903
10	10 26 21.51	1.8700	4 45 31.5	9.666	10	11 55 46.67	1.8762	3 8 53.5	9.896
11	10 28 13.68	1.8689	4 35 51.0	9.683	11	11 57 39.28	1.8777	3 18 47.0	9.887
12	10 30 5.78	1.8678	4 26 9 5	9.700	12	11 59 31.98	1.8791	3 28 39.9	9.878
13	10 31 57.82	1.8668	4 16 27.0	9.716	13	12 1 24.77	1.8806	3 38 32.3	9.868
14	10 33 49.80	1.8658	4 6 43.5	9.732	14	12 3 17.65	1.8821	3 48 24.0	9.857
15	10 35 41.72	1.8649	3 56 59.1	9.747	15	12 5 10.63	1.8838	3 58 15.1	9.847
16	10 37 33.59	1.8641	3 47 13.8	9.762	16	12 7 3.71	1.8855	4 8 5.6	9.836
17	10 39 25.41	1.8633	3 37 27.6	9.777	17	12 8 56.89	1.8872	4 17 55.4	9.823
18	10 41 17.18	1.8625	3 27 40.6	9.790	18	12 10 50.17	1.8889	4 27 44.4	9.810
19	10 43 8.91	1.8618	3 17 52.8	9.802	19	12 12 43.56	1.8907	4 37 32.6	9.797
20	10 45 0.60	1.8612	3 8 4.3	9.815	20	12 14 37.06	1.8927	4 47 20.0	9.783
21	10 46 52.25	1.8606	2 58 15.0	9.827	21	12 16 30.68	1.8946	4 57 6.5	9.769
22	10 48 43.87	1.8601	2 48 25.0	9.838	22	12 18 24.41	1.8965	5 6 52.2	9.753
23	10 50 35.46	1.8596	N. 2 38 34.4	9.849	23	12 20 18.26	1.8986	S. 5 16 36.9	9.737
	TUESDAY 22.					THURSDAY 24.			
0	10 52 27.02	1.8592	N. 2 28 43.1	9.860	0	12 22 12.24	1.9007	S. 5 26 20.6	9.721
1	10 54 18.56	1.8588	2 18 51.2	9.870	1	12 24 6.34	1.9028	5 36 3.4	9.704
2	10 56 10.08	1.8585	2 8 58.7	9.879	2	12 26 0.57	1.9049	5 45 45.1	9.686
3	10 58 1.58	1.8582	1 59 5.7	9.888	3	12 27 54.93	1.9072	5 55 25.7	9.668
4	10 59 53.06	1.8579	1 49 12.2	9.896	4	12 29 49.43	1.9094	6 5 5.2	9.649
5	11 1 44.53	1.8577	1 39 18.2	9.903	5	12 31 44.06	1.9117	6 14 43.5	9.629
6	11 3 35.99	1.8576	1 29 23.8	9.911	6	12 33 38.83	1.9141	6 24 20.7	9.609
7	11 5 27.45	1.8576	1 19 28.9	9.917	7	12 35 33.75	1.9165	6 33 56.6	9.588
8	11 7 18.91	1.8576	1 9 33.7	9.923	8	12 37 28.81	1.9189	6 43 31.3	9.567
9	11 9 10.37	1.8577	0 59 38.1	9.929	9	12 39 24.03	1.9214	6 53 4.7	9.545
10	11 11 1.84	1.8578	0 49 42.2	9.934	10	12 41 19.38	1.9240	7 2 36.7	9.522
11	11 12 53.31	1.8580	0 39 46.0	9.939	11	12 43 14.90	1.9266	7 12 7.3	9.498
12	11 14 44.79	1.8582	0 29 49.5	9.943	12	12 45 10.57	1.9292	7 21 36.5	9.474
13	11 16 36.29	1.8584	0 19 52.8	9.946	13	12 47 6.40	1.9318	7 31 4.2	9.449
14	11 18 27.80	1.8587	N. 0 9 55.9	9.950	14	12 49 2.39	1.9346	7 40 30.4	9.424
15	11 20 19.34	1.8592	S. 0 0 1.2	9.952	15	12 50 58.55	1.9374	7 49 55.1	9.398
16	11 22 10.90	1.8596	0 9 58.4	9.954	16	12 52 54.88	1.9402	7 59 18.2	9.370
17	11 24 2.49	1.8600	0 19 55.7	9.956	17	12 54 51.37	1.9430	8 8 39.6	9.342
18	11 25 54.10	1.8606	0 29 53.1	9.957	18	12 56 48.04	1.9459	8 17 59.4	9.315
19	11 27 45.75	1.8612	0 39 50.5	9.957	19	12 58 44.88	1.9488	8 27 17.4	9.286
20	11 29 37.44	1.8618	0 49 47.9	9.957	20	13 0 41.90	1.9518	8 36 33.7	9.257
21	11 31 29.17	1.8625	0 59 45.3	9.956	21	13 2 39.10	1.9548	8 45 48.2	9.226
22	11 33 20.94	1.8632	1 9 42.6	9.954	22	13 4 36.48	1.9579	8 55 0.8	9.194
23	11 35 12.75	1.8640	1 19 39.8	9.952	23	13 6 34.05	1.9610	9 4 11.5	9.162
24	11 37 4.62	1.8649	S. 1 29 36.9	9.950	24	13 8 31.80	1.9642	S. 9 13 20.3	9.131

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 25.					SUNDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 8 31.80	1.9642	S. 9 13 20.3	9.131	0	14 47 4.22	2.1510	S. 15 39 17.1	6.633
1	13 10 29.75	1.9674	9 22 27.2	9.097	1	14 49 13.41	2.1553	15 45 52.9	6.560
2	13 12 27.89	1.9706	9 31 32.0	9.063	2	14 51 22.85	2.1596	15 52 24.3	6.487
3	13 14 26.22	1.9738	9 40 34.7	9.028	3	14 53 32.55	2.1638	15 58 51.3	6.413
4	13 16 24.75	1.9772	9 49 35.4	8.993	4	14 55 42.51	2.1682	16 5 13.8	6.338
5	13 18 23.48	1.9806	9 58 33.9	8.957	5	14 57 52.73	2.1724	16 11 31.8	6.261
6	13 20 22.41	1.9839	10 7 30.2	8.919	6	15 0 3.20	2.1767	16 17 45.1	6.184
7	13 22 21.55	1.9874	10 16 24.2	8.881	7	15 2 13.93	2.1810	16 23 53.8	6.106
8	13 24 20.90	1.9908	10 25 16.0	8.843	8	15 4 24.92	2.1852	16 29 57.8	6.027
9	13 26 20.45	1.9942	10 34 5.4	8.804	9	15 6 36.16	2.1895	16 35 57.0	5.947
10	13 28 20.21	1.9978	10 42 52.5	8.764	10	15 8 47.66	2.1938	16 41 51.4	5.867
11	13 30 20.19	2.0014	10 51 37.1	8.723	11	15 10 59.42	2.1981	16 47 41.0	5.786
12	13 32 20.38	2.0050	11 0 19.2	8.681	12	15 13 11.43	2.2023	16 53 25.7	5.703
13	13 34 20.79	2.0086	11 8 58.8	8.639	13	15 15 23.70	2.2066	16 59 5.4	5.619
14	13 36 21.41	2.0123	11 17 35.9	8.596	14	15 17 36.22	2.2108	17 4 40.0	5.535
15	13 38 22.26	2.0160	11 26 10.3	8.552	15	15 19 48.99	2.2149	17 10 9.6	5.450
16	13 40 23.33	2.0197	11 34 42.1	8.507	16	15 22 2.01	2.2191	17 15 34.0	5.364
17	13 42 24.62	2.0234	11 43 11.2	8.462	17	15 24 15.28	2.2232	17 20 53.3	5.278
18	13 44 26.14	2.0272	11 51 37.5	8.415	18	15 26 28.80	2.2274	17 26 7.3	5.190
19	13 46 27.89	2.0311	12 0 1.0	8.368	19	15 28 42.57	2.2316	17 31 16.1	5.102
20	13 48 29.87	2.0349	12 8 21.7	8.321	20	15 30 56.59	2.2357	17 36 19.6	5.013
21	13 50 32.08	2.0388	12 16 39.5	8.272	21	15 33 10.85	2.2397	17 41 17.7	4.923
22	13 52 34.52	2.0427	12 24 54.3	8.222	22	15 35 25.35	2.2437	17 46 10.3	4.833
23	13 54 37.20	2.0466	S. 12 33 6.1	8.171	23	15 37 40.10	2.2478	S. 17 50 57.5	4.741
	SATURDAY 26.					MONDAY 28.			
0	13 56 40.11	2.0505	S. 12 41 14.8	8.120	0	15 39 55.09	2.2518	S. 17 55 39.2	4.648
1	13 58 43.26	2.0545	12 49 20.5	8.068	1	15 42 10.32	2.2557	18 0 15.3	4.555
2	14 0 46.65	2.0586	12 57 23.0	8.015	2	15 44 25.78	2.2597	18 4 45.8	4.461
3	14 2 50.29	2.0627	13 5 22.3	7.961	3	15 46 41.48	2.2636	18 9 10.6	4.366
4	14 4 54.17	2.0667	13 13 18.3	7.906	4	15 48 57.41	2.2674	18 13 29.7	4.270
5	14 6 58.29	2.0707	13 21 11.0	7.851	5	15 51 13.57	2.2713	18 17 43.0	4.174
6	14 9 2.65	2.0748	13 29 0.4	7.795	6	15 53 29.97	2.2752	18 21 50.6	4.077
7	14 11 7.26	2.0789	13 36 46.4	7.738	7	15 55 46.59	2.2789	18 25 52.3	3.979
8	14 13 12.12	2.0831	13 44 28.9	7.679	8	15 58 3.44	2.2827	18 29 48.1	3.881
9	14 15 17.23	2.0872	13 52 7.9	7.621	9	16 0 20.51	2.2863	18 33 38.0	3.782
10	14 17 22.59	2.0913	13 59 43.4	7.562	10	16 2 37.80	2.2900	18 37 21.9	3.681
11	14 19 28.19	2.0955	14 7 15.3	7.501	11	16 4 55.31	2.2937	18 40 59.7	3.580
12	14 21 34.05	2.0997	14 14 43.5	7.439	12	16 7 13.04	2.2973	18 44 31.5	3.479
13	14 23 40.16	2.1040	14 22 8.0	7.377	13	16 9 30.98	2.3008	18 47 57.2	3.377
14	14 25 46.53	2.1082	14 29 28.7	7.313	14	16 11 49.13	2.3043	18 51 16.7	3.273
15	14 27 53.15	2.1124	14 36 45.6	7.249	15	16 14 7.49	2.3077	18 54 30.0	3.170
16	14 30 0.02	2.1167	14 43 58.6	7.184	16	16 16 26.05	2.3111	18 57 37.1	3.066
17	14 32 7.15	2.1209	14 51 7.7	7.118	17	16 18 44.82	2.3144	19 0 37.9	2.961
18	14 34 14.53	2.1252	14 58 12.8	7.052	18	16 21 3.78	2.3177	19 3 32.4	2.855
19	14 36 22.17	2.1294	15 5 13.9	6.984	19	16 23 22.94	2.3209	19 6 20.5	2.749
20	14 38 30.06	2.1337	15 12 10.9	6.916	20	16 25 42.29	2.3241	19 9 2.3	2.643
21	14 40 38.21	2.1380	15 19 3.8	6.847	21	16 28 1.83	2.3272	19 11 37.7	2.536
22	14 42 46.62	2.1423	15 25 52.5	6.776	22	16 30 21.56	2.3303	19 14 6.6	2.428
23	14 44 55.29	2.1467	15 32 36.9	6.705	23	16 32 41.47	2.3334	19 16 29.0	2.319
24	14 47 4.22	2.1510	S. 15 39 17.1	6.633	24	16 35 1.57	2.3364	S. 19 18 44.8	2.209

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 29.					**WEDNESDAY 30.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 35 1.57	2.3364	S. 19 18 44.8	2.209	0	17 31 48.45	2.3890	S. 19 39 9.4	0.544
1	16 37 21.84	2.3393	19 20 54.0	2.099	1	17 34 11.83	2.3903	19 38 33.2	0.663
2	16 39 42.29	2.3422	19 22 56.7	1.989	2	17 36 35.29	2.3917	19 37 49.8	0.782
3	16 42 2.90	2.3449	19 24 52.7	1.878	3	17 38 58.83	2.3928	19 36 59.3	0.901
4	16 44 23.68	2.3477	19 26 42.1	1.767	4	17 41 22.43	2.3939	19 36 1.7	1.020
5	16 46 44.63	2.3504	19 28 24.8	1.655	5	17 43 46.10	2.3950	19 34 56.9	1.139
6	16 49 5.73	2.3530	19 30 0.7	1.543	6	17 46 9.83	2.3960	19 33 45.0	1.258
7	16 51 26.99	2.3556	19 31 29.9	1.430	7	17 48 33.62	2.3969	19 32 26.0	1.377
8	16 53 48.40	2.3581	19 32 52.3	1.317	8	17 50 57.46	2.3977	19 30 59.8	1.496
9	16 56 9.96	2.3606	19 34 7.9	1.203	9	17 53 21.35	2.3985	19 29 26.5	1.616
10	16 58 31.67	2.3630	19 35 16.7	1.089	10	17 55 45.28	2.3992	19 27 46.0	1.735
11	17 0 53.52	2.3653	19 36 18.6	0.975	11	17 58 9.26	2.3999	19 25 58.3	1.854
12	17 3 15.50	2.3674	19 37 13.7	0.860	12	18 0 33.27	2.4004	19 24 3.5	1.973
13	17 5 37.61	2.3696	19 38 1.8	0.744	13	18 2 57.31	2.4008	19 22 1.5	2.092
14	17 7 59.85	2.3717	19 38 43.0	0.628	14	18 5 21.37	2.4012	19 19 52.4	2.211
15	17 10 22.22	2.3738	19 39 17.2	0.512	15	18 7 45.46	2.4016	19 17 36.2	2.330
16	17 12 44.71	2.3758	19 39 44.4	0.395	16	18 10 9.56	2.4018	19 15 12.8	2.448
17	17 15 7.31	2.3777	19 40 4.6	0.279	17	18 12 33.68	2.4021	19 12 42.3	2.567
18	17 17 30.03	2.3795	19 40 17.9	0.162	18	18 14 57.81	2.4023	19 10 4.7	2.686
19	17 19 52.85	2.3813	19 40 24.2	0.045	19	18 17 21.95	2.4023	19 7 19.9	2.805
20	17 22 15.78	2.3830	19 40 23.3	0.072	20	18 19 46.09	2.4023	19 4 28.1	2.923
21	17 24 38.81	2.3847	19 40 15.4	0.190	21	18 22 10.23	2.4022	19 1 29.2	3.041
22	17 27 1.94	2.3862	19 40 0.5	0.307	22	18 24 34.36	2.4021	18 58 23.2	3.159
23	17 29 25.15	2.3876	19 39 38.5	0.426	23	18 26 58.48	2.4018	18 55 10.1	3.277
24	17 31 48.45	2.3890	S. 19 39 9.4	0.544	24	18 29 22.58	2.4015	S. 18 51 50.0	3.394

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, ...	6	11	52.8
○ Full Moon, ...	13	5	33.2
☾ Last Quarter, ...	20	19	16.6
● New Moon, ...	28	19	17.0

	d	h
☾ Perigee, ...	11	5.6
☾ Apogee, ...	22	1.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	21° 40′ 20″	3052	23° 9′ 29″	3042	24° 38′ 50″	3032	26° 8′ 23″	3022
	a Aquilæ	E.	62 11 57	3228	60 46 21	3237	59 20 56	3247	57 55 42	3259
	Fomalhaut	E.	91 39 36	3164	90 12 44	3155	88 45 41	3147	87 18 28	3139
	a Pegasi	E.	108 45 1	2878	107 12 14	2866	105 39 12	2855	104 5 56	2845
2	Sun	W.	33 38 59	2977	35 9 40	2969	36 40 32	2960	38 11 35	2950
	Jupiter	W.	11 52 6	2734	13 28 1	2719	15 4 15	2706	16 40 47	2694
	a Aquilæ	E.	50 53 52	3353	49 30 42	3381	48 8 4	3413	46 46 2	3449
	Fomalhaut	E.	80 0 30	3114	78 32 38	3112	77 4 43	3110	75 36 46	3109
	a Pegasi	E.	96 16 12	2795	94 41 37	2785	93 6 50	2777	91 31 52	2768
3	Sun	W.	45 49 41	2906	47 21 52	2897	48 54 15	2888	50 26 49	2880
	Jupiter	W.	24 47 1	2645	26 24 55	2636	28 3 1	2626	29 41 20	2618
	Venus	W.	18 11 43	3063	19 40 38	3043	21 9 57	3026	22 39 37	3010
	Fomalhaut	E.	68 17 5	3119	66 49 19	3125	65 21 40	3133	63 54 10	3141
	a Pegasi	E.	83 34 19	2729	81 58 18	2722	80 22 8	2716	78 45 49	2710
4	Sun	W.	58 12 30	2835	59 46 13	2826	61 20 7	2817	62 54 13	2808
	Jupiter	W.	37 55 55	2574	39 35 26	2566	41 15 8	2557	42 55 2	2548
	Venus	W.	30 12 27	2946	31 43 49	2934	33 15 25	2923	34 47 15	2912
	Fomalhaut	E.	56 39 57	3213	55 14 3	3234	53 48 34	3259	52 23 35	3288
	a Pegasi	E.	70 42 17	2688	69 5 14	2679	67 28 6	2675	65 50 53	2673
5	Sun	W.	70 47 39	2763	72 22 55	2754	73 58 23	2745	75 34 3	2736
	Jupiter	W.	51 17 33	2506	52 58 39	2497	54 39 57	2488	56 21 27	2480
	Venus	W.	42 29 48	2860	44 2 58	2850	45 36 21	2840	47 9 57	2831
	Fomalhaut	E.	45 28 23	3496	44 7 54	3566	42 48 32	3624	41 30 24	3702
	a Pegasi	E.	57 43 59	2666	56 6 33	2667	54 29 9	2669	52 51 48	2672
	a Arietis	E.	100 34 52	2497	98 53 34	2488	97 12 4	2480	95 30 22	2470
6	Sun	W.	83 35 21	2692	85 12 12	2683	86 49 15	2674	88 26 30	2666
	Jupiter	W.	64 51 54	2438	66 34 35	2429	68 17 28	2421	70 0 33	2412
	Venus	W.	55 1 4	2783	56 35 54	2773	58 10 57	2764	59 46 12	2755
	a Pegasi	E.	44 46 50	2718	43 10 28	2729	41 34 26	2747	39 58 49	2769
	a Arietis	E.	86 58 50	2429	85 15 56	2421	83 32 51	2413	81 49 35	2406
7	Sun	W.	96 35 37	2623	98 14 1	2615	99 52 36	2606	101 31 23	2599
	Venus	W.	67 45 26	2711	69 21 51	2702	70 58 28	2694	72 35 16	2686
	a Arietis	E.	73 10 38	2371	71 26 21	2364	69 41 55	2359	67 57 21	2353
	Aldebaran	E.	106 17 17	2309	104 31 31	2302	102 45 34	2294	100 59 26	2287
	Mars	E.	115 1 56	2249	113 14 41	2241	111 27 14	2232	109 39 34	2226
8	Sun	W.	109 47 53	2561	111 27 41	2554	113 7 39	2548	114 47 46	2541
	Venus	W.	80 41 56	2648	82 19 46	2641	83 57 45	2634	85 35 54	2628
	a Aquilæ	W.	42 16 17	3209	43 42 16	3142	45 9 35	3082	46 38 8	3026
	a Arietis	E.	59 12 40	2331	57 27 26	2328	55 42 7	2325	53 56 44	2324
	Aldebaran	E.	92 6 4	2251	90 18 53	2245	88 31 32	2239	86 44 2	2233
	Mars	E.	100 38 23	2186	98 49 35	2179	97 0 36	2173	95 11 28	2167
9	Sun	W.	123 10 27	2514	124 51 21	2510	126 32 21	2504	128 13 28	2500
	Venus	W.	93 48 40	2600	95 27 35	2596	97 6 36	2592	98 45 42	2588
	a Aquilæ	W.	54 16 2	2820	55 50 4	2790	57 24 45	2762	59 0 3	2737
	a Arietis	E.	45 9 37	2328	43 24 19	2333	41 39 8	2339	39 54 5	2346
	Aldebaran	E.	77 44 26	2207	75 56 9	2202	74 7 45	2199	72 19 16	2195
	Mars	E.	86 3 30	2139	84 13 30	2134	82 23 23	2130	80 33 9	2126

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	27° 38′ 8″	3014	29° 8′ 4″	3005	30° 38′ 11″	2996	32° 8′ 29″	2986
	α Aquilæ	E.	56 30 42	3272	55 5 58	3289	53 41 34	3307	52 17 31	3328
	Fomalhaut	E.	85 51 6	3132	84 23 37	3127	82 56 0	3123	81 28 18	3118
	α Pegasi	E.	102 32 26	2834	100 58 42	2824	99 24 45	2814	97 50 35	2804
2	Sun	W.	39 42 50	2942	41 14 16	2933	42 45 53	2924	44 17 41	2915
	Jupiter	W.	18 17 35	2684	19 54 37	2674	21 31 52	2664	23 9 20	2655
	α Aquilæ	E.	45 24 41	3489	44 4 5	3536	42 44 21	3590	41 25 36	3650
	Fomalhaut	E.	74 8 47	3109	72 40 48	3110	71 12 51	3112	69 44 56	3115
	α Pegasi	E.	89 56 42	2760	88 21 22	2752	86 45 51	2744	85 10 10	2737
3	Sun	W.	51 59 34	2870	53 32 31	2862	55 5 39	2852	56 38 59	2844
	Jupiter	W.	31 19 51	2609	32 58 34	2600	34 37 29	2591	36 16 36	2583
	Venus	W.	24 9 37	2996	25 39 55	2982	27 10 30	2969	28 41 21	2956
	Fomalhaut	E.	62 26 50	3151	60 59 42	3163	59 32 49	3178	58 6 13	3194
	α Pegasi	E.	77 9 22	2704	75 32 47	2698	73 56 4	2692	72 19 14	2687
4	Sun	W.	64 28 31	2799	66 3 0	2790	67 37 41	2781	69 12 34	2772
	Jupiter	W.	44 35 9	2540	46 15 27	2531	47 55 57	2522	49 36 39	2514
	Venus	W.	36 19 19	2901	37 51 36	2891	39 24 7	2880	40 56 51	2870
	Fomalhaut	E.	50 59 9	3319	49 35 20	3355	48 12 12	3396	46 49 51	3443
	α Pegasi	E.	64 13 35	2680	62 36 14	2667	60 58 50	2666	59 21 25	2666
5	Sun	W.	77 9 55	2727	78 45 59	2718	80 22 15	2710	81 58 42	2701
	Jupiter	W.	58 3 8	2471	59 45 2	2463	61 27 7	2455	63 9 24	2445
	Venus	W.	48 43 45	2821	50 17 46	2811	51 52 0	2801	53 26 26	2792
	Fomalhaut	E.	40 13 39	3790	38 58 26	3891	37 44 57	4008	36 33 25	4141
	α Pegasi	E.	51 14 31	2678	49 37 21	2684	48 0 19	2692	46 23 28	2701
	α Arietis	E.	93 48 27	2462	92 6 20	2454	90 24 2	2445	88 41 32	2437
6	Sun	W.	90 3 56	2657	91 41 34	2648	93 19 24	2640	94 57 25	2632
	Jupiter	W.	71 43 50	2405	73 27 18	2396	75 10 58	2388	76 54 50	2380
	Venus	W.	61 21 39	2746	62 57 18	2737	64 33 9	2728	66 9 12	2719
	α Pegasi	E.	38 23 41	2795	36 49 7	2826	35 15 13	2864	33 42 8	2909
	α Arietis	E.	80 6 9	2398	78 22 32	2391	76 38 44	2384	74 54 46	2377
7	Sun	W.	103 10 20	2591	104 49 28	2583	106 28 46	2575	108 8 15	2569
	Venus	W.	74 12 15	2678	75 49 25	2670	77 26 45	2662	79 4 16	2655
	α Arietis	E.	66 12 39	2348	64 27 49	2343	62 42 52	2339	60 57 49	2335
	Aldebaran	E.	99 13 7	2279	97 26 37	2272	95 39 56	2265	93 53 5	2258
	Mars	E.	107 51 43	2216	106 3 40	2209	104 15 26	2201	102 27 0	2194
8	Sun	W.	116 28 2	2535	118 8 27	2529	119 49 0	2524	121 29 40	2519
	Venus	W.	87 14 11	2621	88 52 37	2615	90 31 11	2610	92 9 52	2605
	α Aquilæ	W.	48 7 49	2976	49 38 32	2931	51 10 12	2891	52 42 43	2853
	α Arietis	E.	52 11 19	2322	50 25 52	2322	48 40 25	2324	46 55 0	2325
	Aldebaran	E.	84 56 23	2227	83 8 35	2222	81 20 40	2216	79 32 37	2211
	Mars	E.	93 22 10	2161	91 32 43	2155	89 43 7	2149	87 53 22	2144
9	Sun	W.	129 54 41	2497	131 35 58	2494	133 17 19	2492	134 58 44	2489
	Venus	W.	100 24 54	2585	102 4 10	2582	103 43 30	2580	105 22 53	2577
	α Aquilæ	W.	60 35 54	2714	62 12 15	2694	63 49 3	2675	65 26 16	2660
	α Arietis	E.	38 9 13	2357	36 24 36	2368	34 40 16	2384	32 56 19	2403
	Aldebaran	E.	70 30 41	2192	68 42 2	2189	66 53 18	2187	65 4 31	2185
	Mars	E.	78 42 50	2122	76 52 25	2120	75 1 56	2116	73 11 22	2115

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	*a* Aquilæ	W.	67° 3′ 50″	2645	68° 41′ 44″	2632	70° 19′ 55″	2621	71° 58′ 21″	2611
	Fomalhaut	W.	40 26 56	3450	41 48 16	3361	43 11 17	3282	44 35 50	3211
	a Arietis	E.	31 12 49	2427	29 29 53	2456	27 47 36	2489	26 6 8	2533
	Aldebaran	E.	63 15 41	2183	61 26 48	2183	59 37 54	2182	57 48 59	2182
	Mars	E.	71 20 45	2113	69 30 5	2111	67 39 22	2110	65 48 38	2110
	Pollux	E.	105 43 19	2274	103 56 41	2271	102 9 59	2269	100 23 14	2267
11	*a* Aquilæ	W.	80 13 10	2585	81 52 26	2584	83 31 43	2584	85 11 0	2586
	Fomalhaut	W.	51 56 42	2963	53 27 41	2929	54 59 23	2899	56 31 43	2873
	a Pegasi	W.	32 36 24	2759	34 11 46	2710	35 48 13	2669	37 25 35	2633
	Aldebaran	E.	48 44 36	2188	46 55 51	2192	45 7 11	2195	43 18 36	2199
	Mars	E.	56 35 4	2115	54 44 27	2118	52 53 55	2121	51 3 28	2126
	Pollux	E.	91 29 12	2269	89 42 27	2272	87 55 46	2275	86 9 10	2279
12	*a* Aquilæ	W.	93 26 29	2610	95 5 11	2618	96 43 41	2628	98 21 58	2639
	Fomalhaut	W.	64 20 25	2787	65 55 10	2778	67 30 7	2770	69 5 14	2765
	a Pegasi	W.	45 42 12	2526	47 22 49	2515	49 3 42	2506	50 44 47	2499
	Aldebaran	E.	34 17 34	2230	32 29 51	2238	30 42 20	2247	28 55 3	2258
	Mars	E.	41 53 0	2154	40 3 23	2162	38 13 58	2170	36 24 46	2180
	Pollux	E.	77 17 51	2308	75 32 3	2315	73 46 26	2324	72 1 2	2333
13	Fomalhaut	W.	77 1 52	2763	78 37 9	2766	80 12 21	2772	81 47 25	2779
	a Pegasi	W.	59 11 42	2492	60 53 7	2495	62 34 27	2499	64 15 42	2504
	Mars	E.	27 22 58	2246	25 35 39	2264	23 48 46	2285	22 2 24	2306
	Pollux	E.	63 17 48	2392	61 34 2	2406	59 50 36	2422	58 7 32	2438
	Regulus	E.	99 35 23	2296	97 49 17	2306	96 3 26	2316	94 17 50	2328
14	Fomalhaut	W.	89 39 59	2831	91 13 46	2845	92 47 15	2860	94 20 25	2876
	a Pegasi	W.	72 39 39	2544	74 19 51	2554	75 59 49	2565	77 39 32	2577
	a Arietis	W.	29 6 48	2626	30 45 7	2615	32 23 41	2607	34 2 26	2604
	Pollux	E.	49 38 19	2533	47 57 51	2555	46 17 54	2579	44 38 30	2604
	Regulus	E.	85 34 7	2389	83 50 17	2403	82 6 46	2416	80 23 34	2431
15	Fomalhaut	W.	102 0 40	2973	103 31 27	2995	105 1 46	3018	106 31 36	3043
	a Pegasi	W.	85 53 46	2645	87 31 40	2660	89 9 14	2675	90 46 28	2691
	a Arietis	W.	42 16 27	2617	43 54 59	2624	45 33 21	2633	47 11 31	2643
	Pollux	E.	36 30 59	2762	34 55 41	2802	33 21 16	2846	31 47 48	2894
	Regulus	E.	71 52 46	2506	70 11 41	2522	68 30 58	2538	66 50 37	2553
16	*a* Pegasi	W.	98 47 9	2775	100 22 10	2793	101 56 47	2811	103 31 1	2829
	a Arietis	W.	55 18 52	2699	56 55 33	2712	58 31 57	2725	60 8 4	2738
	Aldebaran	W.	21 34 3	2649	23 11 51	2660	24 49 24	2672	26 26 41	2685
	Mars	W.	15 37 8	2655	17 14 48	2643	18 52 44	2639	20 30 46	2639
	Regulus	E.	58 34 32	2636	56 56 28	2655	55 18 47	2672	53 41 29	2689
	Spica	E.	112 13 6	2610	110 34 25	2626	108 56 6	2642	107 18 8	2657
17	*a* Arietis	W.	68 4 10	2807	69 38 29	2821	71 12 29	2835	72 46 12	2848
	Aldebaran	W.	34 28 39	2753	36 4 8	2768	37 39 18	2782	39 14 10	2796
	Mars	W.	28 39 44	2673	30 17 0	2683	31 54 3	2694	33 30 51	2704
	Regulus	E.	45 40 45	2776	44 5 46	2794	42 31 10	2811	40 56 57	2829
	Spica	E.	99 13 37	2737	97 37 46	2752	96 2 15	2767	94 27 4	2782
	Saturn	E.	102 43 7	2783	101 8 17	2798	99 33 47	2814	97 59 37	2829
	Sun	E.	132 44 36	3094	131 16 19	3111	129 48 23	3127	128 20 46	3143
18	*a* Arietis	W.	80 30 22	2916	82 2 21	2929	83 34 3	2942	85 5 29	2954

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
10	*a* Aquilæ	W.	73° 37′ 1″	2603	75° 15′ 52″	2597	76° 54′ 51″	2591	78° 33′ 58″	2588
	Fomalhaut	W.	46 1 46	3148	47 28 57	3094	48 57 14	3045	50 26 31	3001
	a Arietis	E.	24 25 40	2587	22 46 27	2655	21 8 47	2744	19 33 5	2855
	Aldebaran	E.	56 0 4	2182	54 11 9	2183	52 22 16	2184	50 33 25	2186
	Mars	E.	63 57 54	2110	62 7 10	2110	60 16 26	2111	58 25 44	2113
	Pollux	E.	98 36 26	2266	96 49 37	2266	95 2 48	2266	93 15 59	2268
11	*a* Aquilæ	W.	86 50 16	2588	88 29 28	2591	90 8 36	2596	91 47 37	2602
	Fomalhaut	W.	58 4 36	2851	59 37 58	2831	61 11 46	2814	62 45 56	2799
	a Pegasi	W.	39 3 45	2603	40 42 36	2578	42 22 1	2557	44 1 55	2540
	Aldebaran	E.	41 30 7	2204	39 41 46	2209	37 53 32	2216	36 5 28	2223
	Mars	E.	49 13 7	2130	47 22 53	2134	45 32 46	2140	43 42 48	2147
	Pollux	E.	84 22 39	2283	82 36 15	2288	80 49 58	2294	79 3 50	2300
12	*a* Aquilæ	W.	100 0 0	2652	101 37 45	2666	103 15 11	2681	104 52 17	2696
	Fomalhaut	W.	70 40 28	2761	72 15 47	2759	73 51 9	2759	75 26 31	2760
	a Pegasi	W.	52 26 2	2494	54 7 23	2492	55 48 48	2490	57 30 15	2490
	Aldebaran	E.	27 8 1	2269	25 21 16	2282	23 34 50	2296	21 48 44	2311
	Mars	E.	34 35 49	2191	32 47 8	2203	30 58 45	2216	29 10 41	2230
	Pollux	E.	70 15 51	2344	68 30 55	2356	66 46 15	2367	65 1 53	2379
13	Fomalhaut	W.	83 22 20	2788	84 57 4	2797	86 31 36	2807	88 5 55	2818
	a Pegasi	W.	65 56 49	2510	67 37 46	2517	69 18 37	2526	70 59 14	2535
	Mars	E.	20 16 36	2336	18 31 28	2369	16 47 9	2411	15 3 50	2465
	Pollux	E.	56 24 51	2455	54 42 34	2472	53 0 42	2491	51 19 16	2512
	Regulus	E.	92 32 31	2339	90 47 29	2351	89 2 44	2363	87 18 16	2376
14	Fomalhaut	W.	95 53 15	2894	97 25 42	2912	98 57 46	2931	100 29 26	2951
	a Pegasi	W	79 18 58	2590	80 58 7	2602	82 36 59	2616	84 15 32	2630
	a Arietis	W.	35 41 16	2601	37 20 9	2604	38 59 0	2606	40 37 47	2611
	Pollux	E.	42 59 41	2632	41 21 29	2660	39 43 56	2692	38 7 5	2725
	Regulus	E.	78 40 43	2445	76 58 12	2460	75 16 2	2475	73 34 13	2490
15	Fomalhaut	W.	108 0 55	3069	109 29 43	3096	110 57 58	3123	112 25 40	3152
	a Pegasi	W.	92 23 20	2707	93 59 50	2723	95 35 59	2741	97 11 45	2757
	a Arietis	W.	48 49 28	2653	50 27 11	2663	52 4 40	2675	53 41 54	2687
	Pollux	E.	30 15 22	2949	28 44 5	3009	27 14 4	3079	25 45 29	3160
	Regulus	E.	65 10 38	2570	63 31 2	2587	61 51 49	2604	60 12 59	2621
16	*a* Pegasi	W.	105 4 51	2848	106 38 17	2866	108 11 19	2886	109 43 56	2905
	a Arietis	W.	61 43 53	2752	63 19 24	2765	64 54 38	2779	66 29 33	2793
	Aldebaran	W.	28 3 41	2699	29 40 22	2712	31 16 46	2725	32 52 52	2740
	Mars	W.	22 8 48	2643	23 46 45	2648	25 24 35	2655	27 2 15	2663
	Regulus	E.	52 4 34	2706	50 28 2	2723	48 51 53	2741	47 16 7	2759
	Spica	E.	105 40 31	2674	104 3 16	2689	102 26 22	2705	100 49 49	2721
17	*a* Arietis	W.	74 19 37	2862	75 52 44	2876	77 25 34	2889	78 58 7	2903
	Aldebaran	W.	40 48 43	2810	42 22 58	2824	43 56 55	2837	45 30 35	2850
	Mars	W.	35 7 25	2716	36 43 44	2728	38 19 47	2738	39 55 36	2750
	Regulus	E.	39 23 7	2848	37 49 41	2866	36 16 38	2884	34 43 59	2902
	Spica	E.	92 52 12	2797	91 17 40	2811	89 43 27	2825	88 9 32	2839
	Saturn	E.	96 25 46	2843	94 52 14	2858	93 19 1	2872	91 46 6	2886
	SUN	E.	126 53 29	3159	125 26 31	3175	123 59 52	3191	122 33 32	3206
18	*a* Arietis	W.	86 36 40	2966	88 7 35	2978	89 38 15	2989	91 8 41	3001

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Aldebaran	W.	47° 3′ 58″	2863	48° 37′ 4″	2876	50° 9′ 53″	2889	51° 42′ 26″	2901
	Mars	W.	41 31 10	2761	43 6 29	2772	44 41 33	2783	46 16 23	2795
	Regulus	E.	33 11 43	2922	31 39 52	2942	30 8 26	2963	28 37 27	2984
	Spica	E.	86 35 55	2858	85 2 36	2867	83 29 35	2880	81 56 50	2893
	Saturn	E.	90 13 29	2900	88 41 10	2914	87 9 9	2927	85 37 24	2939
	Sun	E.	121 7 30	3220	119 41 45	3236	118 16 18	3250	116 51 8	3264
19	*a* Arietis	W.	92 38 52	3012	94 8 50	3023	95 38 34	3034	97 8 5	3043
	Aldebaran	W.	59 21 24	2958	60 52 29	2969	62 23 21	2978	63 54 1	2988
	Mars	W.	54 7 4	2845	55 40 33	2855	57 13 50	2863	58 46 56	2872
	Pollux	W.	20 5 39	3814	21 20 27	3714	22 36 59	3634	23 54 57	3569
	Spica	E.	74 17 1	2950	72 45 46	2962	71 14 45	2971	69 43 56	2981
	Saturn	E.	78 2 33	2998	76 32 18	3009	75 2 17	3019	73 32 28	3030
	Sun	E.	109 49 13	3328	108 25 34	3339	107 2 8	3350	105 38 54	3360
20	Aldebaran	W.	71 24 33	3029	72 54 10	3036	74 23 38	3042	75 52 59	3047
	Mars	W.	66 29 52	2909	68 2 0	2916	69 33 59	2921	71 5 51	2926
	Pollux	W.	30 38 53	3379	32 1 33	3356	33 24 37	3339	34 48 3	3324
	Spica	E.	62 12 45	3022	60 43 0	3030	59 13 24	3036	57 43 56	3043
	Saturn	E.	66 6 18	3072	64 37 34	3079	63 8 59	3087	61 40 33	3092
	Sun	E.	98 45 36	3407	97 23 27	3415	96 1 27	3421	94 39 34	3428
21	Aldebaran	W.	83 18 5	3070	84 46 51	3073	86 15 33	3078	87 44 12	3078
	Mars	W.	78 43 45	2946	80 15 6	2949	81 46 23	2950	83 17 38	2952
	Pollux	W.	41 49 5	3269	43 13 53	3261	44 38 50	3253	46 3 56	3247
	Spica	E.	50 18 17	3065	48 49 25	3068	47 20 36	3070	45 51 50	3073
	Saturn	E.	54 20 4	3117	52 52 15	3120	51 24 30	3124	49 56 49	3126
	Sun	E.	87 51 51	3453	86 30 34	3456	85 9 21	3460	83 48 12	3462
22	Aldebaran	W.	95 7 2	3081	96 35 35	3080	98 4 9	3078	99 32 45	3077
	Mars	W.	90 53 33	2954	92 24 44	2953	93 55 56	2951	95 27 10	2949
	Pollux	W.	53 11 19	3216	54 37 9	3209	56 3 7	3204	57 29 11	3198
	Regulus	W.	16 14 42	3319	17 38 32	3281	19 3 6	3251	20 28 15	3226
	Spica	E.	38 28 27	3075	36 59 47	3074	35 31 6	3073	34 2 24	3072
	Saturn	E.	42 39 1	3133	41 11 32	3133	39 44 2	3133	38 16 32	3132
	Sun	E.	77 2 51	3465	75 41 48	3464	74 20 44	3463	72 59 38	3461
23	Pollux	W.	64 41 27	3165	66 8 18	3158	67 35 18	3151	69 2 26	3143
	Regulus	W.	27 40 8	3143	29 7 25	3130	30 34 58	3119	32 2 45	3107
	Spica	E.	26 38 9	3056	25 9 5	3051	23 39 55	3046	22 10 39	3041
	Saturn	E.	30 58 45	3125	29 31 6	3124	28 3 26	3123	26 35 44	3122
	Sun	E.	66 13 27	3444	64 52 0	3439	63 30 28	3433	62 8 49	3428
24	Pollux	W.	76 20 28	3102	77 48 35	3094	79 16 52	3085	80 45 20	3075
	Regulus	W.	39 25 0	3054	40 54 6	3043	42 23 25	3033	43 52 57	3022
	Sun	E.	55 18 51	3393	53 56 26	3385	52 33 52	3377	51 11 9	3368
25	Pollux	W.	88 10 36	3027	89 40 15	3017	91 10 7	3006	92 40 12	2997
	Regulus	W.	51 23 56	2968	52 54 49	2957	54 25 56	2945	55 57 18	2933
	Sun	E.	44 14 54	3319	42 51 5	3309	41 27 4	3298	40 2 50	3288
26	Pollux	W.	100 13 48	2944	101 45 11	2934	103 16 47	2924	104 48 36	2912
	Regulus	W.	63 37 51	2874	65 10 43	2862	66 43 51	2850	68 17 14	2838
	Spica	W.	9 42 42	2855	11 15 58	2842	12 49 31	2830	14 23 20	2817
	Sun	E.	32 58 28	3231	31 32 56	3220	30 7 11	3209	28 41 12	3198

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Aldebaran	W.	53° 14′ 43″	2913	54° 46′ 45″	2925	56° 18′ 32″	2936	57° 50′ 5″	2947
	Mars	W.	47 50 58	2805	49 25 19	2815	50 59 27	2825	52 33 22	2835
	Regulus	E.	27 6 54	3006	25 36 49	3030	24 7 14	3056	22 38 11	3085
	Spica	E.	80 24 22	2905	78 52 9	2917	77 20 12	2928	75 48 29	2940
	Saturn	E.	84 5 55	2952	82 34 42	2964	81 3 44	2976	79 33 1	2988
	Sun	E.	115 26 14	3277	114 1 36	3291	112 37 14	3303	111 13 6	3316
19	α Arietis	W.	98 37 24	3053	100 6 31	3063	101 35 26	3072	103 4 10	3080
	Aldebaran	W.	65 24 29	2997	66 54 45	3005	68 24 51	3014	69 54 47	3022
	Mars	W.	60 19 51	2880	61 52 36	2887	63 25 11	2895	64 57 36	2902
	Pollux	W.	25 14 5	3516	26 34 11	3472	27 55 6	3436	29 16 42	3405
	Spica	E.	68 13 20	2990	66 42 55	3000	65 12 42	3008	63 42 39	3015
	Saturn	E.	72 2 52	3039	70 33 27	3048	69 4 14	3056	67 35 11	3065
	Sun	E.	104 15 52	3371	102 53 2	3380	101 30 23	3390	100 7 55	3398
20	Aldebaran	W.	77 22 13	3058	78 51 20	3059	80 20 20	3063	81 49 15	3067
	Mars	W.	72 37 37	2931	74 9 17	2935	75 40 51	2939	77 12 20	2942
	Pollux	W.	36 11 47	3310	37 35 47	3298	39 0 1	3288	40 24 27	3277
	Spica	E.	56 14 36	3048	54 45 23	3053	53 16 16	3057	51 47 14	3061
	Saturn	E.	60 12 14	3098	58 44 2	3104	57 15 57	3109	55 47 58	3113
	Sun	E.	93 17 49	3434	91 56 11	3439	90 34 39	3444	89 13 12	3449
21	Aldebaran	W.	89 12 48	3079	90 41 23	3081	92 9 56	3081	93 38 29	3081
	Mars	W.	84 48 51	2954	86 20 2	2954	87 51 13	2954	89 22 23	2954
	Pollux	W.	47 29 9	3240	48 54 31	3234	50 20 0	3228	51 45 36	3222
	Spica	E.	44 23 7	3074	42 54 26	3075	41 25 46	3075	39 57 6	3076
	Saturn	E.	48 29 11	3129	47 1 36	3130	45 34 3	3131	44 6 31	3133
	Sun	E.	82 27 5	3463	81 6 0	3464	79 44 56	3465	78 23 53	3466
22	Aldebaran	W.	101 1 23	3074	102 30 4	3072	103 58 48	3069	105 27 36	3065
	Mars	W.	96 58 27	2946	98 29 47	2944	100 1 10	2941	101 32 37	2937
	Pollux	W.	58 55 23	3192	60 21 42	3185	61 48 9	3178	63 14 44	3172
	Regulus	W.	21 53 53	3204	23 19 58	3187	24 46 23	3171	26 13 7	3156
	Spica	E.	32 33 40	3069	31 4 53	3066	29 36 2	3064	28 7 8	3060
	Saturn	E.	36 49 1	3131	35 21 29	3130	33 53 56	3129	32 26 22	3127
	Sun	E.	71 38 30	3459	70 17 20	3456	68 56 7	3452	67 34 49	3448
23	Pollux	W.	70 29 43	3135	71 57 10	3128	73 24 46	3119	74 52 32	3111
	Regulus	W.	33 30 46	3096	34 59 0	3086	36 27 27	3075	37 56 7	3065
	Spica	E.	20 41 17	3035	19 11 48	3029	17 42 11	3023	16 12 27	3016
	Saturn	E.	25 8 1	3121	23 40 16	3120	22 12 31	3120	20 44 47	3122
	Sun	E.	60 47 4	3422	59 25 12	3415	58 3 13	3408	56 41 6	3401
24	Pollux	W.	82 14 0	3066	83 42 51	3056	85 11 54	3047	86 41 9	3037
	Regulus	W.	45 22 42	3012	46 52 40	3001	48 22 52	2990	49 53 17	2979
	Sun	E.	49 48 16	3358	48 25 12	3349	47 1 57	3339	45 38 31	3330
25	Pollux	W.	94 10 29	2986	95 40 59	2976	97 11 42	2965	98 42 38	2954
	Regulus	W.	57 28 55	2921	59 0 47	2910	60 32 53	2898	62 5 14	2886
	Sun	E.	38 38 24	3276	37 13 45	3265	35 48 52	3254	34 23 47	3242
26	Pollux	W.	106 20 39	2903	107 52 54	2893	109 25 22	2883	110 58 3	2873
	Regulus	W.	69 50 53	2825	71 24 48	2813	72 58 59	2801	74 33 25	2788
	Spica	W.	15 57 26	2805	17 31 48	2793	19 6 25	2781	20 41 18	2769
	Sun	E.	27 15 1	3187	25 48 36	3177	24 21 59	3167	22 55 10	3156

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to* *Apparent Time.*	Diff. for 1 hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	16 31 45.93	10.817	S.21 54 19.1	22.75	16 16.11	70.35	10 34.93	0.960
Fri.	2	16 36 5.91	10.842	22 3 12.8	21.69	16 16.26	70.43	10 11.58	0.986
Sat.	3	16 40 26.49	10.866	22 11 40.8	20.62	16 16.40	70.51	9 47.63	1.010
Sun.	4	16 44 47.64	10.889	22 19 43.0	19.54	16 16.54	70.59	9 23.09	1.033
Mon.	5	16 49 9.32	10.911	22 27 19.0	18.45	16 16.68	70.67	8 58.04	1.055
Tues.	6	16 53 31.52	10.932	22 34 28.8	17.35	16 16.81	70.74	8 32.46	1.076
Wed.	7	16 57 54.23	10.952	22 41 12.2	16.24	16 16.93	70.80	8 6.39	1.096
Thur.	8	17 2 17.40	10.970	22 47 28.9	15.12	16 17.05	70.86	7 39.85	1.115
Fri.	9	17 6 40.99	10.988	22 53 18.6	13.99	16 17.17	70.92	7 12.89	1.132
Sat.	10	17 11 4.98	11.005	22 58 40.9	12.85	16 17.29	70.98	6 45.53	1.149
Sun.	11	17 15 29.36	11.020	23 3 35.9	11.71	16 17.40	71.03	6 17.77	1.164
Mon.	12	17 19 54.09	11.034	23 8 3.5	10.56	16 17.50	71.07	5 49.68	1.177
Tues.	13	17 24 19.15	11.047	23 12 3.6	9.41	16 17.59	71.11	5 21.26	1.190
Wed.	14	17 28 44.53	11.059	23 15 36.0	8.25	16 17.68	71.15	4 52.51	1.201
Thur.	15	17 33 10.17	11.070	23 18 40.4	7.09	16 17.77	71.19	4 23.51	1.212
Fri.	16	17 37 36.04	11.079	23 21 16.8	5.93	16 17.85	71.22	3 54.28	1.222
Sat.	17	17 42 2.12	11.087	23 23 25.1	4.76	16 17.92	71.24	3 24.85	1.230
Sun.	18	17 46 28.39	11.094	23 25 5.3	3.59	16 17.98	71.26	2 55.21	1.237
Mon.	19	17 50 54.81	11.099	23 26 17.3	2.41	16 18.04	71.28	2 25.43	1.243
Tues.	20	17 55 21.35	11.103	23 27 1.0	1.23	16 18.10	71.29	1 55.53	1.247
Wed.	21	17 59 47.99	11.106	23 27 16.3	0.05	16 18.15	71.30	1 25.54	1.250
Thur.	22	18 4 14.69	11.108	23 27 3.3	1.13	16 18.19	71.30	0 55.48	1.251
Fri.	23	18 8 41.39	11.108	23 26 22.0	2.31	16 18.23	71.29	0 25.42	1.251
Sat.	24	18 13 8.06	11.106	23 25 12.3	3.49	16 18.27	71.28	0 4.62	1.249
Sun.	25	18 17 34.67	11.103	23 23 34.3	4.67	16 18.30	71.27	0 34.60	1.246
Mon.	26	18 22 1.20	11.098	23 21 27.9	5.85	16 18.33	71.26	1 4.49	1.241
Tues.	27	18 26 27.59	11.092	23 18 53.4	7.02	16 18.35	71.24	1 34.25	1.235
Wed.	28	18 30 53.80	11.084	23 15 50.9	8.19	16 18.37	71.21	2 3.82	1.227
Thur.	29	18 35 19.81	11.075	23 12 20.4	9.35	16 18.39	71.18	2 33.19	1.218
Fri.	30	18 39 45.58	11.064	23 8 22.0	10.51	16 18.40	71.15	3 2.33	1.207
Sat.	31	18 44 11.07	11.052	23 3 55.9	11.66	16 18.41	71.11	3 31.18	1.195
Sun.	32	18 48 36.23	11.038	S.22 59 2.1	12.81	16 18.41	71.07	3 59.71	1.181

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, to be added to / subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	16 31 47.84	10.817	S.21 54 23.2	22.75	10 34.76	0.960	16 42 22.60
Fri.	2	16 36 7.75	10.842	22 3 16.5	21.69	10 11.41	0.986	16 46 19.16
Sat.	3	16 40 28.26	10.866	22 11 44.2	20.62	9 47.46	1.010	16 50 15.72
Sun.	4	16 44 49.34	10.889	22 19 46.1	19.54	9 22.93	1.033	16 54 12.27
Mon.	5	16 49 10.95	10.911	22 27 21.8	18.45	8 57.88	1.055	16 58 8.83
Tues.	6	16 53 33.08	10.932	22 34 31.3	17.35	8 32.31	1.076	17 2 5.39
Wed.	7	16 57 55.71	10.952	22 41 14.4	16.24	8 6.24	1.096	17 6 1.95
Thur.	8	17 2 18.80	10.970	22 47 30.8	15.12	7 39.70	1.115	17 9 58.50
Fri.	9	17 6 42.31	10.988	22 53 20.2	13.99	7 12.75	1.132	17 13 55.06
Sat.	10	17 11 6.22	11.005	22 58 42.3	12.85	6 45.40	1.149	17 17 51.62
Sun.	11	17 15 30.52	11.020	23 3 37.1	11.71	6 17.63	1.164	17 21 48.17
Mon.	12	17 19 55.17	11.034	23 8 4.5	10.56	5 49.56	1.177	17 25 44.73
Tues.	13	17 24 20.14	11.047	23 12 4.4	9.41	5 21.15	1.190	17 29 41.29
Wed.	14	17 28 45.43	11.059	23 15 36.6	8.25	4 52.41	1.201	17 33 37.84
Thur.	15	17 33 10.98	11.070	23 18 40.8	7.09	4 23.42	1.212	17 37 34.40
Fri.	16	17 37 36.76	11.079	23 21 17.1	5.93	3 54.20	1.222	17 41 30.96
Sat.	17	17 42 2.75	11.087	23 23 25.3	4.76	3 24.77	1.230	17 45 27.52
Sun.	18	17 46 28.93	11.094	23 25 5.4	3.59	2 55.14	1.237	17 49 24.07
Mon.	19	17 50 55.26	11.099	23 26 17.3	2.41	2 25.37	1.243	17 53 20.63
Tues.	20	17 55 21.71	11.103	23 27 0.9	1.23	1 55.48	1.247	17 57 17.19
Wed.	21	17 59 48.25	11.106	23 27 16.3	0.05	1 25.50	1.250	18 1 13.75
Thur.	22	18 4 14.85	11.108	23 27 3.3	1.13	0 55.45	1.251	18 5 10.30
Fri.	23	18 8 41.46	11.108	23 26 22.0	2.31	0 25.40	1.251	18 9 6.86
Sat.	24	18 13 8.04	11.106	23 25 12.3	3.49	0 4.62	1.249	18 13 3.42
Sun.	25	18 17 34.56	11.103	23 23 34.3	4.67	0 34.59	1.246	18 16 59.97
Mon.	26	18 22 1.00	11.098	23 21 28.0	5.85	1 4.47	1.241	18 20 56.53
Tues.	27	18 26 27.30	11.092	23 18 53.6	7.02	1 34.22	1.235	18 24 53.08
Wed.	28	18 30 53.42	11.084	23 15 51.2	8.19	2 3.78	1.227	18 28 49.64
Thur.	29	18 35 19.34	11.075	23 12 20.8	9.35	2 33.14	1.218	18 32 46.20
Fri.	30	18 39 45.02	11.064	23 8 22.6	9.51	3 2.27	1.207	18 36 42.75
Sat.	31	18 44 10.42	11.052	23 3 56.6	11.66	3 31.11	1.195	18 40 39.31
Sun.	32	18 48 35.50	11.038	S.22 59 2.9	12.81	3 59.63	1.181	18 44 35.87

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	336	249 37 16.0	36 20.1	152.25	+0.67	9.9936779	27.9	7 16 25.71
2	337	250 38 10.6	37 14.6	152.29	0.71	.9936115	27.3	7 12 29.80
3	338	251 39 6.0	38 9.9	152.32	0.72	.9935467	26.6	7 8 33.89
4	339	252 40 2.2	39 5.9	152.35	0.70	.9934836	25.9	7 4 37.98
5	340	253 40 59.2	40 2.7	152.38	0.65	.9934223	25.1	7 0 42.06
6	341	254 41 56.8	41 0.1	152.41	0.57	.9933630	24.3	6 56 46.15
7	342	255 42 55.0	41 58.2	152.44	0.47	.9933056	23.4	6 52 50.24
8	343	256 43 53.9	42 57.0	152.46	0.35	.9932504	22.5	6 48 54.33
9	344	257 44 53.4	43 56.3	152.49	0.22	.9931975	21.5	6 44 58.42
10	345	258 45 53.5	44 56.2	152.52	+0.09	.9931471	20.5	6 41 2.51
11	346	259 46 54.2	45 56.7	152.54	—0.04	.9930991	19.4	6 37 6.60
12	347	260 47 55.5	46 57.9	152.56	0.17	.9930538	18.3	6 33 10.69
13	348	261 48 57.5	47 59.7	152.59	0.28	.9930112	17.2	6 29 14.78
14	349	262 50 0.2	49 2.2	152.62	0.37	.9929715	16.0	6 25 18.87
15	350	263 51 3.6	50 5.4	152.65	0.43	.9929346	14.8	6 21 22.95
16	351	264 52 7.6	51 9.2	152.68	0.46	.9929004	13.7	6 17 27.04
17	352	265 53 12.3	52 13.8	152.71	0.46	.9928688	12.6	6 13 31.13
18	353	266 54 17.8	53 19.2	152.74	0.43	.9928398	11.5	6 9 35.22
19	354	267 55 24.1	54 25.3	152.78	0.36	.9928134	10.5	6 5 39.31
20	355	268 56 31.2	55 32.2	152.81	0.27	.9927894	9.5	6 1 43.39
21	356	269 57 39.0	56 39.8	152.84	0.17	.9927677	8.6	5 57 47.48
22	357	270 58 47.5	57 48.2	152.87	—0.05	.9927480	7.7	5 53 51.57
23	358	271 59 56.6	58 57.1	152.89	+0.08	.9927306	6.9	5 49 55.66
24	359	273 1 6.3	0 6.6	152.91	0.21	.9927151	6.1	5 45 59.75
25	360	274 2 16.5	1 16.6	152.93	0.34	.9927015	5.3	5 42 3.84
26	361	275 3 27.2	2 27.1	152.95	0.46	.9926897	4.6	5 38 7.93
27	362	276 4 38.2	3 38.0	152.96	0.56	.9926796	3.9	5 34 12.02
28	363	277 5 49.5	4 49.2	152.97	0.64	.9926710	3.2	5 30 16.11
29	364	278 7 0.8	6 0.3	152.97	0.69	.9926641	2.5	5 26 20.20
30	365	279 8 12.1	7 11.4	152.97	0.71	.9926590	1.8	5 22 24.28
31	366	280 9 23.4	8 22.5	152.97	0.70	.9926556	1.0	5 18 28.37
32	367	281 10 34.6	9 33.5	152.96	+0.66	9.9926540	0.3	5 14 32.46

NOTE: λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 51.8	15 55.1	58 6.6	+1.07	58 18.8	+0.96	1 51.1	2.31	2.2
2	15 58.1	16 0.7	58 29.7	0.85	58 39.3	0.75	2 46.6	2.29	3.2
3	16 3.0	16 4.9	58 47.6	0.64	58 54.7	0.54	3 41.0	2.24	4.2
4	16 6.5	16 7.8	59 0.6	0.44	59 5.3	0.35	4 34.1	2.18	5.2
5	16 8.8	16 9.5	59 9.0	0.26	59 11.5	+0.17	5 25.9	2.14	6.2
6	16 9.9	16 10.0	59 13.0	+0.08	59 13.4	−0.01	6 17.1	2.13	7.2
7	16 9.8	16 9.3	59 12.7	−0.11	59 10.8	0.21	7 8.3	2.14	8.2
8	16 8.4	16 7.1	59 7.6	0.32	59 3.0	0.44	8 0.2	2.19	9.2
9	16 5.5	16 3.4	58 56.9	0.57	58 49.3	0.70	8 53.4	2.24	10.2
10	16 0.9	15 58.0	58 40.1	0.84	58 29.3	0.97	9 47.8	2.29	11.2
11	15 54.6	15 50.8	58 16.9	1.10	58 3.0	1.22	10 43.3	2.32	12.2
12	15 46.7	15 42.2	57 47.7	1.32	57 31.2	1.42	11 38.8	2.30	13.2
13	15 37.4	15 32.5	57 13.7	1.49	56 55.5	1.53	12 33.3	2.24	14.2
14	15 27.4	15 22.3	56 36.9	1.55	56 18.2	1.55	13 25.9	2.14	15.2
15	15 17.3	15 12.4	55 59.7	1.52	55 41.8	1.46	14 15.9	2.03	16.2
16	15 7.8	15 3.5	55 24.8	1.37	55 9.0	1.26	15 3.1	1.92	17.2
17	14 59.6	14 56.2	54 54.7	1.12	54 42.2	0.96	15 48.1	1.83	18.2
18	14 53.3	14 51.1	54 31.7	0.78	54 23.4	0.59	16 31.2	1.77	19.2
19	14 49.4	14 48.5	54 17.5	−0.39	54 14.1	−0.18	17 13.2	1.74	20.2
20	14 48.3	14 48.8	54 13.3	+0.04	54 15.1	+0.26	17 55.1	1.75	21.2
21	14 50.0	14 51.9	54 19.5	0.48	54 26.6	0.70	18 37.5	1.79	22.2
22	14 54.5	14 57.9	54 36.3	0.91	54 48.4	1.11	19 21.4	1.87	23.2
23	15 1.8	15 6.3	55 2.9	1.29	55 19.6	1.46	20 7.5	1.97	24.2
24	15 11.3	15 16.8	55 38.0	1.60	55 58.0	1.72	20 56.3	2.10	25.2
25	15 22.6	15 28.6	56 19.3	1.81	56 41.5	1.87	21 48.1	2.22	26.2
26	15 34.8	15 41.0	57 4.1	1.88	57 26.7	1.86	22 42.5	2.32	27.2
27	15 47.0	15 52.7	57 48.8	1.81	58 10.0	1.71	23 39.0	2.38	28.2
28	15 58.1	16 3.0	58 29.8	1.57	58 47.8	1.42	☌		29.2
29	16 7.4	16 11.0	59 3.8	1.23	59 17.2	1.02	0 36.1	2.38	0.6
30	16 14.0	16 16.2	59 28.1	0.79	59 36.3	0.56	1 32.8	2.34	1.6
31	16 17.7	16 18.4	59 41.7	+0.34	59 44.4	+0.12	2 28.2	2.27	2.6
32	16 18.5	16 17.8	59 44.5	−0.09	59 42.1	−0.30	3 22.0	2.18	3.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 1.					SATURDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 29 22.58	2.4015	S.18 51 50.0	3.394	0	20 23 19.03	2.3308	S.14 2 50.3	8.395
1	18 31 46.66	2.4012	18 48 22.9	3.510	1	20 25 38.81	2.3287	13 54 24.0	8.481
2	18 34 10.72	2.4008	18 44 48.7	3.627	2	20 27 58.47	2.3265	13 45 52.6	8.565
3	18 36 34.76	2.4004	18 41 7.6	3.744	3	20 30 17.99	2.3243	13 37 16.2	8.648
4	18 38 58.77	2.3998	18 37 19.5	3.860	4	20 32 37.38	2.3221	13 28 34.8	8.731
5	18 41 22.74	2.3992	18 33 24.4	3.976	5	20 34 56.64	2.3199	13 19 48.5	8.813
6	18 43 46.68	2.3986	18 29 22.4	4.091	6	20 37 15.77	2.3177	13 10 57.3	8.894
7	18 46 10.57	2.3978	18 25 13.5	4.206	7	20 39 34.76	2.3154	13 2 1.2	8.974
8	18 48 34.42	2.3971	18 20 57.7	4.321	8	20 41 53.62	2.3132	12 53 0.4	9.053
9	18 50 58.22	2.3963	18 16 35.0	4.435	9	20 44 12.35	2.3111	12 43 54.9	9.131
10	18 53 21.97	2.3954	18 12 5.5	4.548	10	20 46 30.95	2.3089	12 34 44.7	9.207
11	18 55 45.67	2.3945	18 7 29.2	4.661	11	20 48 49.42	2.3067	12 25 30.0	9.283
12	18 58 9.31	2.3935	18 2 46.2	4.773	12	20 51 7.75	2.3045	12 16 10.8	9.357
13	19 0 32.89	2.3924	17 57 56.4	4.886	13	20 53 25.96	2.3023	12 6 47.1	9.431
14	19 2 56.40	2.3913	17 52 59.8	4.998	14	20 55 44.03	2.3002	11 57 19.0	9.503
15	19 5 19.84	2.3901	17 47 56.6	5.109	15	20 58 1.98	2.2980	11 47 46.7	9.576
16	19 7 43.21	2.3889	17 42 46.7	5.220	16	21 0 19.79	2.2958	11 38 10.0	9.647
17	19 10 6.51	2.3877	17 37 30.2	5.330	17	21 2 37.48	2.2937	11 28 29.1	9.717
18	19 12 29.74	2.3864	17 32 7.1	5.440	18	21 4 55.04	2.2916	11 18 44.0	9.785
19	19 14 52.88	2.3850	17 26 37.4	5.549	19	21 7 12.47	2.2894	11 8 54.9	9.852
20	19 17 15.94	2.3836	17 21 1.2	5.657	20	21 9 29.77	2.2873	10 59 1.8	9.918
21	19 19 38.91	2.3822	17 15 18.5	5.765	21	21 11 46.95	2.2853	10 49 4.7	9.983
22	19 22 1.80	2.3807	17 9 29.4	5.872	22	21 14 4.01	2.2833	10 39 3.7	10.048
23	19 24 24.60	2.3792	S.17 3 33.9	5.978	23	21 16 20.94	2.2812	S.10 28 58.9	10.112
	FRIDAY 2.					SUNDAY 4.			
0	19 26 47.31	2.3776	S.16 57 32.0	6.084	0	21 18 37.75	2.2792	S.10 18 50.3	10.174
1	19 29 9.92	2.3759	16 51 23.8	6.189	1	21 20 54.44	2.2772	10 8 38.0	10.235
2	19 31 32.42	2.3743	16 45 9.3	6.294	2	21 23 11.01	2.2752	9 58 22.1	10.295
3	19 33 54.83	2.3727	16 38 48.5	6.398	3	21 25 27.46	2.2732	9 48 2.6	10.354
4	19 36 17.14	2.3709	16 32 21.6	6.501	4	21 27 43.80	2.2713	9 37 39.6	10.412
5	19 38 39.34	2.3691	16 25 48.4	6.603	5	21 30 0.02	2.2694	9 27 13.1	10.469
6	19 41 1.43	2.3673	16 19 9.1	6.704	6	21 32 16.13	2.2675	9 16 43.3	10.526
7	19 43 23.42	2.3656	16 12 23.8	6.805	7	21 34 32.12	2.2656	9 6 10.1	10.580
8	19 45 45.30	2.3637	16 5 32.5	6.905	8	21 36 48.00	2.2637	8 55 33.7	10.633
9	19 48 7.06	2.3618	15 58 35.2	7.005	9	21 39 3.77	2.2619	8 44 54.1	10.686
10	19 50 28.71	2.3598	15 51 31.9	7.104	10	21 41 19.43	2.2602	8 34 11.4	10.737
11	19 52 50.24	2.3579	15 44 22.7	7.202	11	21 43 34.99	2.2585	8 23 25.7	10.787
12	19 55 11.66	2.3560	15 37 7.7	7.298	12	21 45 50.45	2.2568	8 12 36.9	10.837
13	19 57 32.96	2.3540	15 29 46.9	7.394	13	21 48 5.81	2.2551	8 1 45.2	10.885
14	19 59 54.14	2.3519	15 22 20.4	7.489	14	21 50 21.06	2.2534	7 50 50.7	10.932
15	20 2 15.19	2.3498	15 14 48.2	7.584	15	21 52 36.22	2.2518	7 39 53.4	10.978
16	20 4 36.12	2.3478	15 7 10.3	7.678	16	21 54 51.28	2.2502	7 28 53.4	11.023
17	20 6 56.93	2.3457	14 59 26.8	7.771	17	21 57 6.24	2.2486	7 17 50.7	11.067
18	20 9 17.61	2.3437	14 51 37.8	7.863	18	21 59 21.11	2.2472	7 6 45.4	11.109
19	20 11 38.17	2.3416	14 43 43.3	7.954	19	22 1 35.90	2.2457	6 55 37.6	11.151
20	20 13 58.60	2.3394	14 35 43.4	8.044	20	22 3 50.59	2.2441	6 44 27.3	11.192
21	20 16 18.90	2.3373	14 27 38.0	8.133	21	22 6 5.19	2.2427	6 33 14.6	11.231
22	20 18 39.08	2.3352	14 19 27.3	8.222	22	22 8 19.71	2.2413	6 21 59.7	11.268
23	20 20 59.12	2.3329	14 11 11.4	8.309	23	22 10 34.15	2.2400	6 10 42.5	11.305
24	20 23 19.03	2.3308	S.14 2 50.3	8.395	24	22 12 48.51	2.2387	S. 5 59 23.1	11.341

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 5.					WEDNESDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 12 48.51	2.2387	S. 5 59 23.1	11.341	0	23 59 34.78	2.2274	N. 3 24 45.2	11.726
1	22 15 2.79	2.2374	5 48 1.6	11.376	1	0 1 48.45	2.2283	3 36 28.2	11.706
2	22 17 17.00	2.2363	5 36 38.0	11.409	2	0 4 2.18	2.2293	3 48 9.9	11.684
3	22 19 31.14	2.2351	5 25 12.5	11.442	3	0 6 15.97	2.2303	3 59 50.3	11.662
4	22 21 45.21	2.2339	5 13 45.0	11.473	4	0 8 29.82	2.2313	4 11 29.3	11.638
5	22 23 59.21	2.2328	5 2 15.7	11.503	5	0 10 43.73	2.2323	4 23 6.9	11.614
6	22 26 13.14	2.2317	4 50 44.6	11.532	6	0 12 57.70	2.2333	4 34 43.0	11.588
7	22 28 27.01	2.2307	4 39 11.8	11.561	7	0 15 11.73	2.2345	4 46 17.5	11.561
8	22 30 40.82	2.2297	4 27 37.3	11.587	8	0 17 25.84	2.2357	4 57 50.3	11.533
9	22 32 54.57	2.2287	4 16 1.3	11.612	9	0 19 40.02	2.2369	5 9 21.4	11.504
10	22 35 8.27	2.2278	4 4 23.8	11.637	10	0 21 54.27	2.2381	5 20 50.8	11.474
11	22 37 21.91	2.2270	3 52 44.8	11.662	11	0 24 8.59	2.2393	5 32 18.3	11.442
12	22 39 35.51	2.2262	3 41 4.4	11.684	12	0 26 22.99	2.2406	5 43 43.8	11.408
13	22 41 49.06	2.2255	3 29 22.7	11.704	13	0 28 37.47	2.2421	5 55 7.3	11.375
14	22 44 2.57	2.2247	3 17 39.8	11.724	14	0 30 52.04	2.2435	6 6 28.8	11.340
15	22 46 16.03	2.2240	3 5 55.8	11.743	15	0 33 6.69	2.2449	6 17 48.1	11.304
16	22 48 29.45	2.2234	2 54 10.6	11.761	16	0 35 21.43	2.2464	6 29 5.2	11.267
17	22 50 42.84	2.2229	2 42 24.4	11.778	17	0 37 36.26	2.2479	6 40 20.1	11.228
18	22 52 56.19	2.2223	2 30 37.3	11.794	18	0 39 51.18	2.2494	6 51 32.6	11.188
19	22 55 9.51	2.2218	2 18 49.2	11.808	19	0 42 6.19	2.2509	7 2 42.7	11.147
20	22 57 22.81	2.2214	2 7 0.3	11.821	20	0 44 21.29	2.2525	7 13 50.3	11.106
21	22 59 36.08	2.2209	1 55 10.7	11.833	21	0 46 36.49	2.2542	7 24 55.4	11.063
22	23 1 49.32	2.2205	1 43 20.4	11.844	22	0 48 51.79	2.2558	7 35 57.9	11.019
23	23 4 2.54	2.2202	S. 1 31 29.4	11.854	23	0 51 7.19	2.2575	N. 7 46 57.7	10.973
	TUESDAY 6.					THURSDAY 8.			
0	23 6 15.75	2.2201	S. 1 19 37.9	11.862	0	0 53 22.69	2.2592	N. 7 57 54.7	10.927
1	23 8 28.95	2.2199	1 7 45.9	11.870	1	0 55 38.30	2.2611	8 8 48.9	10.879
2	23 10 42.13	2.2198	0 55 53.5	11.877	2	0 57 54.02	2.2628	8 19 40.2	10.831
3	23 12 55.30	2.2196	0 44 0.7	11.882	3	1 0 9.84	2.2646	8 30 28.6	10.781
4	23 15 8.47	2.2194	0 32 7.7	11.886	4	1 2 25.77	2.2664	8 41 13.9	10.730
5	23 17 21.63	2.2192	0 20 14.5	11.888	5	1 4 41.81	2.2683	8 51 56.1	10.678
6	23 19 34.79	2.2194	S. 0 8 21.1	11.890	6	1 6 57.96	2.2702	9 2 35.2	10.625
7	23 21 47.96	2.2195	N. 0 3 32.3	11.891	7	1 9 14.23	2.2721	9 13 11.1	10.571
8	23 24 1.13	2.2196	0 15 25.8	11.891	8	1 11 30.61	2.2740	9 23 43.7	10.515
9	23 26 14.31	2.2197	0 27 19.2	11.889	9	1 13 47.11	2.2760	9 34 12.9	10.458
10	23 28 27.49	2.2199	0 39 12.5	11.886	10	1 16 3.73	2.2780	9 44 38.7	10.401
11	23 30 40.69	2.2202	0 51 5.5	11.882	11	1 18 20.47	2.2799	9 55 1.0	10.342
12	23 32 53.91	2.2205	1 2 58.3	11.877	12	1 20 37.32	2.2819	10 5 19.7	10.282
13	23 35 7.15	2.2208	1 14 50.7	11.870	13	1 22 54.30	2.2840	10 15 34.8	10.221
14	23 37 20.41	2.2212	1 26 42.7	11.863	14	1 25 11.40	2.2860	10 25 46.2	10.159
15	23 39 33.69	2.2216	1 38 34.3	11.855	15	1 27 28.62	2.2881	10 35 53.9	10.096
16	23 41 47.00	2.2221	1 50 25.3	11.845	16	1 29 45.97	2.2902	10 45 57.7	10.031
17	23 44 0.34	2.2226	2 2 15.7	11.834	17	1 32 3.44	2.2923	10 55 57.6	9.966
18	23 46 13.71	2.2232	2 14 5.4	11.822	18	1 34 21.04	2.2943	11 5 53.6	9.900
19	23 48 27.12	2.2238	2 25 54.3	11.808	19	1 36 38.76	2.2964	11 15 45.6	9.832
20	23 50 40.57	2.2245	2 37 42.4	11.794	20	1 38 56.61	2.2986	11 25 33.5	9.764
21	23 52 54.06	2.2252	2 49 29.6	11.779	21	1 41 14.59	2.3007	11 35 17.3	9.694
22	23 55 7.59	2.2258	3 1 15.9	11.763	22	1 43 32.70	2.3028	11 44 56.8	9.623
23	23 57 21.16	2.2266	3 13 1.1	11.745	23	1 45 50.93	2.3049	11 54 32.1	9.551
24	23 59 34.78	2.2274	N. 3 24 45.2	11.726	24	1 48 9.29	2.3071	N. 12 4 3.0	9.478

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	1 48 9.29	2.3071	N.12 4 3.0	9.478
1	1 50 27.78	2.3093	12 13 29.5	9.405
2	1 52 46.40	2.3114	12 22 51.6	9.330
3	1 55 5.15	2.3136	12 32 9.1	9.254
4	1 57 24.03	2.3158	12 41 22.0	9.177
5	1 59 43.04	2.3179	12 50 30.3	9.099
6	2 2 2.18	2.3201	12 59 33.9	9.020
7	2 4 21.45	2.3222	13 8 32.7	8.940
8	2 6 40.85	2.3243	13 17 26.7	8.859
9	2 9 0.37	2.3264	13 26 15.8	8.777
10	2 11 20.02	2.3286	13 35 0.0	8.694
11	2 13 39.80	2.3307	13 43 39.1	8.610
12	2 15 59.71	2.3328	13 52 13.2	8.525
13	2 18 19.74	2.3349	14 0 42.1	8.439
14	2 20 39.90	2.3371	14 9 5.9	8.353
15	2 23 0.19	2.3392	14 17 24.5	8.265
16	2 25 20.60	2.3412	14 25 37.7	8.176
17	2 27 41.13	2.3432	14 33 45.6	8.087
18	2 30 1.79	2.3452	14 41 48.1	7.996
19	2 32 22.56	2.3472	14 49 45.1	7.905
20	2 34 43.46	2.3493	14 57 36.7	7.813
21	2 37 4.48	2.3513	15 5 22.7	7.719
22	2 39 25.61	2.3532	15 13 3.0	7.625
23	2 41 46.86	2.3551	N.15 20 37.7	7.531

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 44 8.22	2.3570	N.15 28 6.7	7.436
1	2 46 29.70	2.3589	15 35 29.9	7.338
2	2 48 51.29	2.3607	15 42 47.3	7.241
3	2 51 12.98	2.3624	15 49 58.8	7.143
4	2 53 34.78	2.3642	15 57 4.4	7.043
5	2 55 56.69	2.3660	16 4 4.0	6.943
6	2 58 18.70	2.3677	16 10 57.6	6.843
7	3 0 40.81	2.3693	16 17 45.2	6.742
8	3 3 3.02	2.3710	16 24 26.7	6.640
9	3 5 25.33	2.3726	16 31 2.0	6.538
10	3 7 47.73	2.3742	16 37 31.2	6.434
11	3 10 10.23	2.3757	16 43 54.1	6.329
12	3 12 32.82	2.3772	16 50 10.7	6.224
13	3 14 55.49	2.3785	16 56 21.0	6.118
14	3 17 18.24	2.3799	17 2 25.0	6.012
15	3 19 41.08	2.3813	17 8 22.5	5.905
16	3 22 4.00	2.3826	17 14 13.6	5.798
17	3 24 26.99	2.3838	17 19 58.2	5.690
18	3 26 50.06	2.3851	17 25 36.4	5.582
19	3 29 13.20	2.3862	17 31 8.0	5.472
20	3 31 36.40	2.3873	17 36 33.0	5.363
21	3 33 59.67	2.3883	17 41 51.5	5.252
22	3 36 23.00	2.3893	17 47 3.3	5.141
23	3 38 46.38	2.3902	17 52 8.4	5.029
24	3 41 9.82	2.3911	N.17 57 6.8	4.917

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	3 41 9.82	2.3911	N.17 57 6.8	4.917
1	3 43 33.31	2.3919	18 1 58.4	4.804
2	3 45 56.85	2.3927	18 6 43.3	4.692
3	3 48 20.43	2.3934	18 11 21.4	4.578
4	3 50 44.05	2.3940	18 15 52.7	4.465
5	3 53 7.71	2.3946	18 20 17.2	4.351
6	3 55 31.40	2.3951	18 24 34.8	4.236
7	3 57 55.12	2.3957	18 28 45.5	4.121
8	4 0 18.88	2.3961	18 32 49.3	4.006
9	4 2 42.66	2.3964	18 36 46.2	3.890
10	4 5 6.45	2.3967	18 40 36.1	3.773
11	4 7 30.26	2.3968	18 44 19.0	3.657
12	4 9 54.07	2.3969	18 47 55.0	3.541
13	4 12 17.89	2.3970	18 51 24.0	3.425
14	4 14 41.71	2.3970	18 54 45.9	3.308
15	4 17 5.53	2.3969	18 58 0.8	3.190
16	4 19 29.34	2.3968	19 1 8.7	3.072
17	4 21 53.15	2.3966	19 4 9.5	2.954
18	4 24 16.94	2.3963	19 7 3.2	2.836
19	4 26 40.71	2.3960	19 9 49.8	2.718
20	4 29 4.46	2.3956	19 12 29.4	2.601
21	4 31 28.18	2.3952	19 15 1.9	2.482
22	4 33 51.88	2.3947	19 17 27.3	2.364
23	4 36 15.54	2.3940	N.19 19 45.6	2.246

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 38 39.16	2.3933	N.19 21 56.8	2.128
1	4 41 2.73	2.3925	19 24 0.9	2.009
2	4 43 26.26	2.3917	19 25 57.9	1.890
3	4 45 49.73	2.3908	19 27 47.7	1.771
4	4 48 13.15	2.3898	19 29 30.4	1.652
5	4 50 36.51	2.3887	19 31 6.0	1.534
6	4 52 59.80	2.3876	19 32 34.5	1.416
7	4 55 23.02	2.3864	19 33 55.9	1.297
8	4 57 46.17	2.3852	19 35 10.2	1.179
9	5 0 9.24	2.3839	19 36 17.4	1.061
10	5 2 32.24	2.3825	19 37 17.5	0.943
11	5 4 55.15	2.3810	19 38 10.5	0.825
12	5 7 17.96	2.3794	19 38 56.5	0.707
13	5 9 40.68	2.3778	19 39 35.4	0.590
14	5 12 3.30	2.3761	19 40 7.3	0.472
15	5 14 25.81	2.3743	19 40 32.1	0.355
16	5 16 48.22	2.3725	19 40 50.0	0.239
17	5 19 10.51	2.3706	19 41 0.8	0.122
18	5 21 32.69	2.3687	19 41 4.6	0.005
19	5 23 54.75	2.3667	19 41 1.5	0.109
20	5 26 16.69	2.3646	19 40 51.5	0.225
21	5 28 38.50	2.3624	19 40 34.5	0.341
22	5 31 0.18	2.3602	19 40 10.6	0.456
23	5 33 21.72	2.3578	19 39 39.8	0.571
24	5 35 43.12	2.3556	N.19 39 2.1	0.685

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	5 35 43.12	2.3556	N.19 39 2.1	0.685
1	5 38 4.38	2.3531	19 38 17.6	0.799
2	5 40 25.49	2.3505	19 37 26.3	0.913
3	5 42 46.44	2.3479	19 36 28.1	1.026
4	5 45 7.24	2.3453	19 35 23.2	1.138
5	5 47 27.88	2.3427	19 34 11.5	1.251
6	5 49 48.36	2.3399	19 32 53.1	1.362
7	5 52 8.67	2.3371	19 31 28.1	1.473
8	5 54 28.82	2.3343	19 29 56.4	1.583
9	5 56 48.79	2.3314	19 28 18.1	1.694
10	5 59 8.59	2.3285	19 26 33.1	1.804
11	6 1 28.21	2.3254	19 24 41.6	1.913
12	6 3 47.64	2.3223	19 22 43.6	2.021
13	6 6 6.89	2.3192	19 20 39.1	2.128
14	6 8 25.94	2.3160	19 18 28.2	2.236
15	6 10 44.80	2.3128	19 16 10.8	2.343
16	6 13 3.47	2.3095	19 13 47.0	2.450
17	6 15 21.94	2.3061	19 11 16.9	2.556
18	6 17 40.20	2.3027	19 8 40.4	2.661
19	6 19 58.26	2.2992	19 5 57.6	2.765
20	6 22 16.11	2.2957	19 3 8.6	2.868
21	6 24 33.75	2.2922	19 0 13.4	2.972
22	6 26 51.18	2.2887	18 57 12.0	3.074
23	6 29 8.40	2.2851	N.18 54 4.5	3.176

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 31 25.40	2.2815	N.18 50 50.9	3.277
1	6 33 42.18	2.2778	18 47 31.3	3.377
2	6 35 58.73	2.2740	18 44 5.7	3.476
3	6 38 15.06	2.2702	18 40 34.2	3.575
4	6 40 31.16	2.2664	18 36 56.7	3.673
5	6 42 47.03	2.2626	18 33 13.4	3.771
6	6 45 2.67	2.2587	18 29 24.2	3.868
7	6 47 18.08	2.2548	18 25 29.2	3.964
8	6 49 33.25	2.2508	18 21 28.5	4.059
9	6 51 48.18	2.2469	18 17 22.1	4.154
10	6 54 2.88	2.2430	18 13 10.1	4.248
11	6 56 17.34	2.2389	18 8 52.4	4.341
12	6 58 31.55	2.2348	18 4 29.2	4.433
13	7 0 45.52	2.2307	18 0 0.5	4.524
14	7 2 59.24	2.2267	17 55 26.4	4.614
15	7 5 12.72	2.2226	17 50 46.8	4.704
16	7 7 25.95	2.2184	17 46 1.9	4.793
17	7 9 38.93	2.2142	17 41 11.6	4.882
18	7 11 51.66	2.2101	17 36 16.1	4.969
19	7 14 4.14	2.2059	17 31 15.4	5.055
20	7 16 16.37	2.2017	17 26 9.5	5.141
21	7 18 28.35	2.1975	17 20 58.5	5.226
22	7 20 40.07	2.1932	17 15 42.4	5.311
23	7 22 51.54	2.1890	17 10 21.2	5.394
24	7 25 2.75	2.1848	N.17 4 55.1	5.476

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	7 25 2.75	2.1848	N.17 4 55.1	5.476
1	7 27 13.71	2.1805	16 59 24.1	5.557
2	7 29 24.41	2.1762	16 53 48.2	5.638
3	7 31 34.85	2.1719	16 48 7.5	5.718
4	7 33 45.04	2.1677	16 42 22.0	5.798
5	7 35 54.97	2.1633	16 36 31.7	5.877
6	7 38 4.64	2.1590	16 30 36.8	5.954
7	7 40 14.05	2.1547	16 24 37.3	6.030
8	7 42 23.21	2.1505	16 18 33.2	6.106
9	7 44 32.11	2.1462	16 12 24.6	6.181
10	7 46 40.75	2.1418	16 6 11.5	6.256
11	7 48 49.13	2.1375	15 59 53.9	6.329
12	7 50 57.25	2.1332	15 53 32.0	6.401
13	7 53 5.12	2.1290	15 47 5.8	6.472
14	7 55 12.73	2.1247	15 40 35.3	6.543
15	7 57 20.08	2.1204	15 34 0.6	6.613
16	7 59 27.18	2.1162	15 27 21.7	6.682
17	8 1 34.02	2.1119	15 20 38.7	6.751
18	8 3 40.61	2.1077	15 13 51.6	6.818
19	8 5 46.94	2.1034	15 7 0.5	6.884
20	8 7 53.02	2.0992	15 0 5.5	6.950
21	8 9 58.85	2.0950	14 53 6.5	7.016
22	8 12 4.42	2.0908	14 46 3.6	7.080
23	8 14 9.74	2.0866	N.14 38 56.9	7.143

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 16 14.81	2.0824	N.14 31 46.4	7.206
1	8 18 19.63	2.0783	14 24 32.2	7.268
2	8 20 24.21	2.0742	14 17 14.3	7.328
3	8 22 28.54	2.0701	14 9 52.8	7.388
4	8 24 32.62	2.0660	14 2 27.7	7.447
5	8 26 36.46	2.0619	13 54 59.1	7.506
6	8 28 40.05	2.0578	13 47 27.0	7.564
7	8 30 43.40	2.0539	13 39 51.5	7.621
8	8 32 46.52	2.0499	13 32 12.6	7.677
9	8 34 49.39	2.0459	13 24 30.3	7.732
10	8 36 52.03	2.0420	13 16 44.7	7.786
11	8 38 54.43	2.0381	13 8 55.9	7.840
12	8 40 56.60	2.0342	13 1 3.9	7.893
13	8 42 58.53	2.0303	12 53 8.7	7.945
14	8 45 0.23	2.0265	12 45 10.5	7.996
15	8 47 1.70	2.0227	12 37 9.2	8.047
16	8 49 2.95	2.0189	12 29 4.9	8.097
17	8 51 3.97	2.0152	12 20 57.6	8.146
18	8 53 4.77	2.0114	12 12 47.4	8.194
19	8 55 5.34	2.0077	12 4 34.4	8.241
20	8 57 5.69	2.0040	11 56 18.5	8.288
21	8 59 5.82	2.0004	11 47 59.8	8.334
22	9 1 5.74	1.9969	11 39 38.4	8.379
23	9 3 5.45	1.9933	11 31 14.3	8.424
24	9 5 4.94	1.9898	N.11 22 47.5	8.468

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	9 5 4.94	1.9898	N. 11 22 47.5	8.468
1	9 7 4.22	1.9863	11 14 18.1	8.511
2	9 9 3.30	1.9829	11 5 46.2	8.553
3	9 11 2.17	1.9795	10 57 11.8	8.594
4	9 13 0.84	1.9762	10 48 34.9	8.635
5	9 14 59.31	1.9728	10 39 55.6	8.675
6	9 16 57.58	1.9695	10 31 13.9	8.715
7	9 18 55.65	1.9663	10 22 29.8	8.754
8	9 20 53.53	1.9631	10 13 43.4	8.792
9	9 22 51.22	1.9599	10 4 54.8	8.829
10	9 24 48.72	1.9567	9 56 3.9	8.866
11	9 26 46.03	1.9536	9 47 10.9	8.902
12	9 28 43.15	1.9505	9 38 15.7	8.937
13	9 30 40.09	1.9476	9 29 18.4	8.972
14	9 32 36.86	1.9447	9 20 19.1	9.005
15	9 34 33.45	1.9418	9 11 17.8	9.038
16	9 36 29.87	1.9389	9 2 14.5	9.071
17	9 38 26.11	1.9360	8 53 9.3	9.103
18	9 40 22.19	1.9332	8 44 2.2	9.133
19	9 42 18.10	1.9305	8 34 53.3	9.164
20	9 44 13.85	1.9278	8 25 42.5	9.194
21	9 46 9.44	1.9252	8 16 30.0	9.223
22	9 48 4.87	1.9226	8 7 15.7	9.252
23	9 50 0.14	1.9199	N. 7 57 59.7	9.281

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 51 55.25	1.9173	N. 7 48 42.0	9.308
1	9 53 50.22	1.9150	7 39 22.7	9.334
2	9 55 45.05	1.9126	7 30 1.9	9.360
3	9 57 39.73	1.9102	7 20 39.5	9.386
4	9 59 34.27	1.9078	7 11 15.6	9.411
5	10 1 28.67	1.9056	7 1 50.2	9.435
6	10 3 22.94	1.9033	6 52 23.4	9.458
7	10 5 17.07	1.9011	6 42 55.2	9.481
8	10 7 11.07	1.8990	6 33 25.6	9.504
9	10 9 4.95	1.8969	6 23 54.7	9.526
10	10 10 58.70	1.8948	6 14 22.5	9.547
11	10 12 52.33	1.8929	6 4 49.1	9.567
12	10 14 45.85	1.8910	5 55 14.4	9.587
13	10 16 39.25	1.8891	5 45 38.6	9.606
14	10 18 32.54	1.8872	5 36 1.6	9.626
15	10 20 25.72	1.8855	5 26 23.5	9.644
16	10 22 18.80	1.8838	5 16 44.3	9.662
17	10 24 11.77	1.8820	5 7 4.1	9.679
18	10 26 4.64	1.8804	4 57 22.8	9.696
19	10 27 57.42	1.8789	4 47 40.6	9.712
20	10 29 50.11	1.8773	4 37 57.5	9.726
21	10 31 42.70	1.8758	4 28 13.5	9.741
22	10 33 35.21	1.8744	4 18 28.6	9.755
23	10 35 27.63	1.8730	4 8 42.9	9.769
24	10 37 19.97	1.8717	N. 3 58 56.3	9.782

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	10 37 19.97	1.8717	N. 3 58 56.3	9.782
1	10 39 12.23	1.8704	3 49 9.0	9.795
2	10 41 4.42	1.8692	3 39 20.9	9.807
3	10 42 56.54	1.8681	3 29 32.1	9.818
4	10 44 48.59	1.8669	3 19 42.7	9.829
5	10 46 40.57	1.8658	3 9 52.6	9.840
6	10 48 32.49	1.8649	3 0 1.9	9.849
7	10 50 24.36	1.8640	2 50 10.7	9.858
8	10 52 16.17	1.8631	2 40 18.9	9.867
9	10 54 7.93	1.8622	2 30 26.6	9.876
10	10 55 59.63	1.8613	2 20 33.8	9.884
11	10 57 51.29	1.8606	2 10 40.5	9.891
12	10 59 42.91	1.8600	2 0 46.9	9.897
13	11 1 34.49	1.8593	1 50 52.9	9.903
14	11 3 26.03	1.8587	1 40 58.5	9.908
15	11 5 17.54	1.8582	1 31 3.8	9.914
16	11 7 9.02	1.8577	1 21 8.8	9.919
17	11 9 0.47	1.8573	1 11 13.6	9.923
18	11 10 51.90	1.8570	1 1 18.1	9.926
19	11 12 43.31	1.8567	0 51 22.5	9.928
20	11 14 34.70	1.8564	0 41 26.7	9.931
21	11 16 26.08	1.8562	0 31 30.8	9.933
22	11 18 17.45	1.8561	0 21 34.7	9.935
23	11 20 8.81	1.8560	N. 0 11 38.6	9.935

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 22 0.17	1.8560	N. 0 1 42.5	9.935
1	11 23 51.53	1.8560	S. 0 8 13.6	9.935
2	11 25 42.89	1.8561	0 18 9.7	9.934
3	11 27 34.26	1.8562	0 28 5.8	9.933
4	11 29 25.63	1.8563	0 38 1.7	9.931
5	11 31 17.02	1.8566	0 47 57.5	9.929
6	11 33 8.42	1.8569	0 57 53.2	9.926
7	11 34 59.85	1.8573	1 7 48.7	9.923
8	11 36 51.30	1.8577	1 17 44.0	9.919
9	11 38 42.77	1.8581	1 27 39.0	9.915
10	11 40 34.27	1.8586	1 37 33.8	9.910
11	11 42 25.80	1.8592	1 47 28.2	9.904
12	11 44 17.37	1.8598	1 57 22.3	9.898
13	11 46 8.98	1.8605	2 7 16.0	9.892
14	11 48 0.63	1.8612	2 17 9.3	9.885
15	11 49 52.33	1.8620	2 27 2.2	9.878
16	11 51 44.07	1.8628	2 36 54.6	9.870
17	11 53 35.87	1.8637	2 46 46.6	9.861
18	11 55 27.72	1.8647	2 56 38.0	9.852
19	11 57 19.63	1.8657	3 6 28.8	9.842
20	11 59 11.60	1.8667	3 16 19.0	9.831
21	12 1 3.64	1.8678	3 26 8.6	9.820
22	12 2 55.74	1.8690	3 35 57.5	9.809
23	12 4 47.92	1.8702	3 45 45.7	9.797
24	12 6 40.17	1.8715	S. 3 55 33.2	9.786

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	12 6 40.17	1.8715	S. 3 55 33.2	9.786
1	12 8 32.50	1.8728	4 5 19.9	9.773
2	12 10 24.91	1.8742	4 15 5.9	9.760
3	12 12 17.41	1.8757	4 24 51.0	9.746
4	12 14 9.99	1.8772	4 34 35.3	9.731
5	12 16 2.67	1.8788	4 44 18.7	9.716
6	12 17 55.44	1.8804	4 54 1.1	9.699
7	12 19 48.31	1.8820	5 3 42.6	9.683
8	12 21 41.28	1.8837	5 13 23.1	9.666
9	12 23 34.35	1.8854	5 23 2.5	9.648
10	12 25 27.53	1.8873	5 32 40.9	9.631
11	12 27 20.82	1.8891	5 42 18.2	9.613
12	12 29 14.22	1.8910	5 51 54 4	9.594
13	12 31 7.74	1.8930	6 1 29.4	9.574
14	12 33 1.38	1.8950	6 11 3.3	9.554
15	12 34 55.14	1.8971	6 20 35.9	9.533
16	12 36 49.03	1.8992	6 30 7.2	9.511
17	12 38 43.05	1.9014	6 39 37.2	9.489
18	12 40 37.20	1.9037	6 49 5.9	9.467
19	12 42 31.49	1.9060	6 58 33.2	9.444
20	12 44 25.91	1.9083	7 7 59.1	9.421
21	12 46 20.47	1.9108	7 17 23.6	9.396
22	12 48 15.18	1.9131	7 26 46.6	9.371
23	12 50 10.04	1.9156	S. 7 36 8.1	9.346

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 52 5.05	1.9181	S. 7 45 28.0	9.318
1	12 54 0.21	1.9207	7 54 46.3	9.292
2	12 55 55.53	1.9233	8 4 3.0	9.264
3	12 57 51.01	1.9260	8 13 18.0	9.236
4	12 59 46.66	1.9288	8 22 31.3	9.207
5	13 1 42.47	1.9316	8 31 42.9	9.178
6	13 3 38.45	1.9344	8 40 52.7	9.148
7	13 5 34.60	1.9373	8 50 0.7	9.117
8	13 7 30.92	1.9402	8 59 6.8	9.086
9	13 9 27.42	1.9432	9 8 11.0	9.054
10	13 11 24.10	1.9462	9 17 13.3	9.022
11	13 13 20.97	1.9493	9 26 13.6	8.988
12	13 15 18.02	1.9524	9 35 11.9	8.954
13	13 17 15.26	1.9556	9 44 8.1	8.920
14	13 19 12.69	1.9588	9 53 2.3	8.885
15	13 21 10.32	1.9621	10 1 54.3	8.848
16	13 23 8.14	1.9654	10 10 44.1	8.812
17	13 25 6.16	1.9687	10 19 31.7	8.775
18	13 27 4.39	1.9722	10 28 17.1	8.737
19	13 29 2.82	1.9756	10 37 0.1	8.698
20	13 31 1.46	1.9791	10 45 40.8	8.658
21	13 33 0.31	1.9826	10 54 19.1	8.618
22	13 34 59.37	1.9862	11 2 55.0	8.577
23	13 36 58.65	1.9898	11 11 28.4	8.536
24	13 38 58.14	1.9934	S. 11 19 59.3	8.494

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	13 38 58.14	1.9934	S. 11 19 59.3	8.494
1	13 40 57.86	1.9972	11 28 27.6	8.451
2	13 42 57.80	2.0008	11 36 53.3	8.407
3	13 44 57.96	2.0046	11 45 16.4	8.362
4	13 46 58.35	2.0084	11 53 36.8	8.317
5	13 48 58.97	2.0122	12 1 54.4	8.271
6	13 50 59.82	2.0162	12 10 9.3	8.224
7	13 53 0.91	2.0202	12 18 21.3	8.177
8	13 55 2.24	2.0242	12 26 30.5	8.128
9	13 57 3.81	2.0282	12 34 36.7	8.079
10	13 59 5.62	2.0322	12 42 40.0	8.029
11	14 1 7.67	2.0362	12 50 40.2	7.978
12	14 3 9.96	2.0403	12 58 37.4	7.927
13	14 5 12.50	2.0444	13 6 31.5	7.875
14	14 7 15.29	2.0486	13 14 22.4	7.822
15	14 9 18.33	2.0528	13 22 10.1	7.768
16	14 11 21.63	2.0571	13 29 54.6	7.714
17	14 13 25.18	2.0613	13 37 35.8	7.658
18	14 15 28.99	2.0657	13 45 13.6	7.602
19	14 17 33.06	2.0700	13 52 48.0	7.545
20	14 19 37.39	2.0743	14 0 19.0	7.487
21	14 21 41.98	2.0787	14 7 46.5	7.428
22	14 23 46.83	2.0831	14 15 10.4	7.369
23	14 25 51.95	2.0876	S. 14 22 30.8	7.309

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 27 57.34	2.0921	S. 14 29 47.5	7.248
1	14 30 3.00	2.0965	14 37 0.5	7.186
2	14 32 8.92	2.1010	14 44 9.8	7.123
3	14 34 15.12	2.1056	14 51 15.3	7.059
4	14 36 21.59	2.1101	14 58 16.9	6.994
5	14 38 28.33	2.1147	15 5 14.6	6.929
6	14 40 35.35	2.1193	15 12 8.4	6.863
7	14 42 42.64	2.1239	15 18 58.2	6.796
8	14 44 50.21	2.1285	15 25 43.9	6.728
9	14 46 58.06	2.1331	15 32 25.5	6.659
10	14 49 6.18	2.1377	15 39 3.0	6.590
11	14 51 14.58	2.1423	15 45 36.3	6.519
12	14 53 23.26	2.1470	15 52 5.3	6.447
13	14 55 32.22	2.1517	15 58 30.0	6.375
14	14 57 41.47	2.1565	16 4 50.3	6.302
15	14 59 51.00	2.1612	16 11 6.2	6.228
16	15 2 0.81	2.1658	16 17 17.6	6.153
17	15 4 10.90	2.1706	16 23 24.5	6.077
18	15 6 21.28	2.1753	16 29 26.9	6.001
19	15 8 31.94	2.1801	16 35 24.6	5.923
20	15 10 42.89	2.1848	16 41 17.6	5.844
21	15 12 54.12	2.1895	16 47 5.9	5.765
22	15 15 5.63	2.1942	16 52 49.4	5.684
23	15 17 17.42	2.1989	16 58 28.0	5.603
24	15 19 29.50	2.2037	S. 17 4 1.8	5.521

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	15 19 29.50	2.2037	S.17 4 1.8	5.521
1	15 21 41.86	2.2084	17 9 30.6	5.438
2	15 23 54.51	2.2132	17 14 54.4	5.355
3	15 26 7.44	2.2179	17 20 13.2	5.271
4	15 28 20.65	2.2226	17 25 26.8	5.185
5	15 30 34.15	2.2273	17 30 35.3	5.098
6	15 32 47.93	2.2319	17 35 38.6	5.011
7	15 35 1.98	2.2366	17 40 36.6	4.922
8	15 37 16.32	2.2413	17 45 29.3	4.833
9	15 39 30.94	2.2459	17 50 16.6	4.743
10	15 41 45.83	2.2505	17 54 58.5	4.653
11	15 44 1.00	2.2552	17 59 35.0	4.562
12	15 46 16.45	2.2598	18 4 5.9	4.469
13	15 48 32.17	2.2643	18 8 31.2	4.375
14	15 50 48.17	2.2689	18 12 50.9	4.281
15	15 53 4.44	2.2734	18 17 4.9	4.186
16	15 55 20.98	2.2779	18 21 13.2	4.091
17	15 57 37.79	2.2823	18 25 15.8	3.994
18	15 59 54.86	2.2867	18 29 12.5	3.896
19	16 2 12.20	2.2912	18 33 3.3	3.798
20	16 4 29.80	2.2956	18 36 48.2	3.699
21	16 6 47.67	2.3000	18 40 27.2	3.599
22	16 9 5.80	2.3043	18 44 0.1	3.498
23	16 11 24.19	2.3086	S.18 47 27.0	3.397

MONDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 13 42.83	2.3128	S.18 50 47.7	3.294
1	16 16 1.72	2.3170	18 54 2.2	3.191
2	16 18 20.87	2.3212	18 57 10.5	3.087
3	16 20 40.27	2.3253	19 0 12.6	2.982
4	16 22 59.91	2.3294	19 3 8.4	2.877
5	16 25 19.80	2.3335	19 5 57.8	2.770
6	16 27 39.93	2.3375	19 8 40.8	2.663
7	16 30 0.30	2.3414	19 11 17.4	2.555
8	16 32 20.90	2.3453	19 13 47.5	2.447
9	16 34 41.74	2.3492	19 16 11.1	2.338
10	16 37 2.81	2.3530	19 18 28.1	2.228
11	16 39 24.10	2.3568	19 20 38.5	2.118
12	16 41 45.62	2.3605	19 22 42.3	2.007
13	16 44 7.36	2.3641	19 24 39.4	1.895
14	16 46 29.31	2.3677	19 26 29.7	1.783
15	16 48 51.48	2.3712	19 28 13.3	1.670
16	16 51 13.86	2.3747	19 29 50.0	1.556
17	16 53 36.45	2.3782	19 31 19.9	1.442
18	16 55 59.24	2.3815	19 32 43.0	1.327
19	16 58 22.23	2.3847	19 33 59.1	1.211
20	17 0 45.41	2.3879	19 35 8.3	1.096
21	17 3 8.78	2.3911	19 36 10.6	0.980
22	17 5 32.35	2.3943	19 37 5.9	0.863
23	17 7 56.10	2.3973	19 37 54.1	0.745
24	17 10 20.03	2.4003	S.19 38 35.2	0.626

TUESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	17 10 20.03	2.4003	S.19 38 35.2	0.626
1	17 12 44.13	2.4032	19 39 9.2	0.507
2	17 15 8.41	2.4060	19 39 36.1	0.388
3	17 17 32.85	2.4088	19 39 55.8	0.269
4	17 19 57.46	2.4115	19 40 8.4	0.150
5	17 22 22.23	2.4141	19 40 13.8	0.030
6	17 24 47.15	2.4167	19 40 11.9	0.091
7	17 27 12.23	2.4192	19 40 2.8	0.212
8	17 29 37.45	2.4216	19 39 46.4	0.334
9	17 32 2.81	2.4239	19 39 22.7	0.456
10	17 34 28.31	2.4261	19 38 51.7	0.577
11	17 36 53.94	2.4283	19 38 13.4	0.699
12	17 39 19.70	2.4303	19 37 27.8	0.822
13	17 41 45.58	2.4323	19 36 34.8	0.945
14	17 44 11.58	2.4342	19 35 34.4	1.069
15	17 46 37.69	2.4361	19 34 26.5	1.192
16	17 49 3.91	2.4379	19 33 11.3	1.316
17	17 51 30.24	2.4396	19 31 48.7	1.439
18	17 53 56.67	2.4413	19 30 18.7	1.563
19	17 56 23.19	2.4427	19 28 41.2	1.687
20	17 58 49.80	2.4442	19 26 56.3	1.810
21	18 1 16.50	2.4456	19 25 4.0	1.934
22	18 3 43.28	2.4469	19 23 4.2	2.058
23	18 6 10.13	2.4481	S.19 20 57.0	2.182

WEDNESDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 8 37.05	2.4492	S.19 18 42.3	2.306
1	18 11 4.04	2.4503	19 16 20.2	2.431
2	18 13 31.09	2.4512	19 13 50.6	2.556
3	18 15 58.19	2.4521	19 11 13.5	2.680
4	18 18 25.34	2.4529	19 8 29.0	2.804
5	18 20 52.54	2.4537	19 5 37.0	2.928
6	18 23 19.78	2.4543	19 2 37.6	3.052
7	18 25 47.06	2.4549	18 59 30.8	3.175
8	18 28 14.37	2.4554	18 56 16.6	3.298
9	18 30 41.71	2.4558	18 52 55.0	3.422
10	18 33 9.07	2.4562	18 49 25.9	3.546
11	18 35 36.45	2.4564	18 45 49.5	3.669
12	18 38 3.84	2.4566	18 42 5.7	3.792
13	18 40 31.24	2.4567	18 38 14.5	3.914
14	18 42 58.64	2.4567	18 34 16.0	4.036
15	18 45 26.04	2.4567	18 30 10.2	4.157
16	18 47 53.44	2.4566	18 25 57.1	4.279
17	18 50 20.83	2.4563	18 21 36.7	4.400
18	18 52 48.20	2.4560	18 17 9.1	4.521
19	18 55 15.55	2.4557	18 12 34.2	4.642
20	18 57 42.88	2.4553	18 7 52.1	4.762
21	19 0 10.18	2.4548	18 3 2.8	4.881
22	19 2 37.45	2.4543	17 58 6.4	4.999
23	19 5 4.69	2.4537	17 53 2.9	5.117
24	19 7 31.89	2.4529	S.17 47 52.3	5.235

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	19 7 31.89	2.4529	S. 17 47 52.3	5.235
1	19 9 59.04	2.4521	17 42 34.6	5.353
2	19 12 26.14	2.4512	17 37 9.9	5.470
3	19 14 53.18	2.4503	17 31 38.2	5.587
4	19 17 20.17	2.4493	17 25 59.5	5.703
5	19 19 47.10	2.4483	17 20 13.9	5.819
6	19 22 13.96	2.4472	17 14 21.4	5.932
7	19 24 40.76	2.4460	17 8 22.1	6.046
8	19 27 7.48	2.4448	17 2 15.9	6.159
9	19 29 34.13	2.4435	16 56 3.0	6.271
10	19 32 0.70	2.4422	16 49 43.3	6.383
11	19 34 27.19	2.4408	16 43 17.0	6.494
12	19 36 53.59	2.4393	16 36 44.0	6.605
13	19 39 19.90	2.4378	16 30 4.4	6.714
14	19 41 46.12	2.4362	16 23 18.3	6.822
15	19 44 12.24	2.4346	16 16 25.7	6.930
16	19 46 38.27	2.4329	16 9 26.7	7.037
17	19 49 4.19	2.4312	16 2 21.3	7.143
18	19 51 30.01	2.4294	15 55 9.5	7.249
19	19 53 55.72	2.4276	15 47 51.4	7.353
20	19 56 21.32	2.4257	15 40 27.1	7.457
21	19 58 46.81	2.4238	15 32 56.6	7.559
22	20 1 12.18	2.4218	15 25 20.0	7.661
23	20 3 37.43	2.4199	S. 15 17 37.3	7.762

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 6 2.57	2.4179	S. 15 9 48.6	7.862
1	20 8 27.58	2.4158	15 1 53.9	7.960
2	20 10 52.47	2.4137	14 53 53.4	8.058
3	20 13 17.23	2.4116	14 45 47.0	8.155
4	20 15 41.86	2.4094	14 37 34.8	8.251
5	20 18 6.36	2.4072	14 29 16.9	8.346
6	20 20 30.73	2.4050	14 20 53.4	8.439
7	20 22 54.96	2.4027	14 12 24.2	8.532
8	20 25 19.06	2.4005	14 3 49.5	8.623
9	20 27 43.02	2.3982	13 55 9.4	8.714
10	20 30 6.84	2.3958	13 46 23.8	8.804
11	20 32 30.52	2.3935	13 37 32.9	8.892
12	20 34 54.06	2.3911	13 28 36.8	8.979
13	20 37 17.45	2.3887	13 19 35.4	9.065
14	20 39 40.70	2.3863	13 10 28.9	9.150
15	20 42 3.81	2.3839	13 1 17.4	9.234
16	20 44 26.77	2.3814	12 52 0.9	9.317
17	20 46 49.58	2.3790	12 42 39.4	9.398
18	20 49 12.25	2.3765	12 33 13.1	9.478
19	20 51 34.76	2.3739	12 23 42.0	9.557
20	20 53 57.12	2.3714	12 14 6.2	9.635
21	20 56 19.33	2.3690	12 4 25.7	9.712
22	20 58 41.40	2.3665	11 54 40.7	9.788
23	21 1 3.31	2.3639	11 44 51.1	9.863
24	21 3 25.07	2.3614	S. 11 34 57.1	9.936

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h m s	s	° ′ ″	″
0	21 3 25.07	2.3614	S. 11 34 57.1	9.936
1	21 5 46.68	2.3589	11 24 58.8	10.008
2	21 8 8.14	2.3564	11 14 56.2	10.078
3	21 10 29.45	2.3539	11 4 49.4	10.147
4	21 12 50.61	2.3513	10 54 38.4	10.216
5	21 15 11.61	2.3488	10 44 23.3	10.283
6	21 17 32.47	2.3463	10 34 4.3	10.349
7	21 19 53.17	2.3438	10 23 41.4	10.414
8	21 22 13.73	2.3413	10 13 14.6	10.478
9	21 24 34.13	2.3388	10 2 44.1	10.539
10	21 26 54.38	2.3363	9 52 9.9	10.600
11	21 29 14.49	2.3339	9 41 32.1	10.660
12	21 31 34.45	2.3314	9 30 50.7	10.718
13	21 33 54.26	2.3290	9 20 5.9	10.775
14	21 36 13.93	2.3266	9 9 17.8	10.831
15	21 38 33.45	2.3241	8 58 26.3	10.885
16	21 40 52.82	2.3217	8 47 31.6	10.938
17	21 43 12.05	2.3193	8 36 33.8	10.989
18	21 45 31.14	2.3169	8 25 32.9	11.040
19	21 47 50.08	2.3145	8 14 29.0	11.089
20	21 50 8.88	2.3122	8 3 22.2	11.137
21	21 52 27.54	2.3099	7 52 12.6	11.183
22	21 54 46.07	2.3076	7 41 0.2	11.229
23	21 57 4.46	2.3053	S. 7 29 45.1	11.273

SUNDAY, JANUARY 1, 1865.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 59 22.71	2.3031	S. 7 18 27.4	11.316

PHASES OF THE MOON.

	d	h	m
☽ First Quarter, . .	5	19	33.7
○ Full Moon, . . .	12	19	12.3
☾ Last Quarter, . .	20	17	2.6
● New Moon, . .	28	9	21.4

	d	h
☾ Perigee, ...	6	10.2
☾ Apogee, ...	19	21.8
☾ Perigee, ...	31	18.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SUN	W.	27° 40′ 46″	2782	29° 15′ 38″	2773	30° 50′ 41″	2764	32° 25′ 56″	2756
	Fomalhaut	E.	59 36 44	3085	58 8 16	3104	56 40 11	3124	55 12 31	3148
	α Pegasi	E.	74 3 28	2607	72 24 43	2604	70 45 54	2601	69 7 1	2599
2	SUN	W.	40 24 40	2721	42 0 52	2715	43 37 12	2709	45 13 40	2704
	Fomalhaut	E.	48 2 44	3326	46 39 2	3377	45 16 19	3434	43 54 41	3499
	α Pegasi	E.	60 52 11	2600	59 13 16	2603	57 34 25	2607	55 55 39	2612
	α Arietis	E.	103 49 20	2447	102 6 52	2441	100 24 16	2436	98 41 32	2430
3	SUN	W.	53 17 39	2681	54 54 45	2677	56 31 56	2672	58 9 13	2668
	Venus	W.	19 41 11	2998	21 11 26	2962	22 42 27	2931	24 14 7	2905
	α Pegasi	E.	47 44 17	2660	46 6 44	2677	44 29 33	2695	42 52 47	2716
	α Arietis	E.	90 6 6	2408	88 22 43	2405	86 39 15	2401	84 55 42	2398
4	SUN	W.	66 16 46	2654	67 54 28	2651	69 32 14	2649	71 10 3	2646
	Venus	W.	31 59 13	2822	33 33 12	2811	35 7 25	2802	36 41 50	2794
	α Arietis	E.	76 17 5	2389	74 33 14	2387	72 49 21	2386	71 5 26	2385
	Mars	E.	109 1 34	2223	107 13 41	2221	105 25 45	2219	103 37 46	2216
	Aldebaran	E.	109 25 3	2328	107 39 45	2326	105 54 24	2324	104 8 59	2322
5	SUN	W.	79 19 54	2636	80 58 0	2635	82 36 7	2634	84 14 16	2633
	Venus	W.	44 36 24	2763	46 11 41	2757	47 47 5	2753	49 22 34	2750
	α Aquilæ	W.	39 47 7	3408	41 9 14	3332	42 32 48	3264	43 57 42	3202
	α Arietis	E.	62 25 47	2387	60 41 54	2389	58 58 3	2390	57 14 14	2393
	Mars	E.	94 37 6	2208	92 48 51	2207	91 0 34	2206	89 12 16	2206
	Aldebaran	E.	95 21 11	2313	93 35 30	2311	91 49 46	2309	90 4 0	2308
6	SUN	W.	92 25 24	2628	94 3 41	2628	95 41 58	2627	97 20 16	2627
	Venus	W.	57 21 5	2736	58 56 57	2734	60 32 52	2732	62 8 49	2731
	α Aquilæ	W.	51 18 10	2981	52 48 47	2949	54 20 4	2920	55 51 58	2894
	α Arietis	E.	48 36 15	2412	46 52 58	2419	45 9 51	2426	43 26 54	2434
	Mars	E.	80 10 29	2203	78 22 6	2202	76 33 42	2202	74 45 18	2203
	Aldebaran	E.	81 14 49	2304	79 28 56	2304	77 43 2	2304	75 57 8	2303
7	SUN	W.	105 31 45	2629	107 10 1	2629	108 48 17	2629	110 26 32	2631
	Venus	W.	70 8 56	2727	71 45 0	2727	73 21 4	2727	74 57 8	2727
	α Aquilæ	W.	63 38 43	2799	65 13 14	2785	66 48 2	2772	68 23 6	2762
	Fomalhaut	W.	37 36 7	3793	38 51 16	3682	40 8 22	3583	41 27 15	3496
	α Arietis	E.	34 55 46	2501	33 14 34	2521	31 33 50	2545	29 53 40	2574
	Mars	E.	65 43 30	2206	63 55 12	2208	62 6 56	2209	60 18 42	2211
	Aldebaran	E.	67 7 34	2304	65 21 40	2304	63 35 47	2306	61 49 56	2307
8	SUN	W.	118 37 18	2639	120 15 20	2641	121 53 19	2643	123 31 15	2646
	Venus	W.	82 57 14	2732	84 33 11	2735	86 9 5	2737	87 44 56	2739
	α Aquilæ	W.	76 21 24	2726	77 57 29	2723	79 33 38	2720	81 9 51	2718
	Fomalhaut	W.	48 22 44	3187	49 49 9	3143	51 16 27	3105	52 44 31	3070
	Mars	E.	51 18 16	2223	49 30 22	2226	47 42 33	2230	45 54 50	2234
	Aldebaran	E.	53 1 6	2314	51 15 27	2316	49 29 51	2319	47 44 19	2322
	Pollux	E.	95 42 17	2396	93 58 36	2397	92 14 57	2398	90 31 20	2401
9	α Aquilæ	W.	89 11 8	2723	90 47 17	2727	92 23 21	2732	93 59 18	2738
	Fomalhaut	W.	60 14 4	2946	61 45 24	2930	63 17 5	2915	64 49 5	2902
	α Pegasi	W.	41 24 17	2702	43 0 54	2681	44 37 59	2663	46 15 28	2649
	Mars	E.	36 57 56	2261	35 10 59	2268	33 24 13	2277	31 37 39	2286
	Aldebaran	E.	38 57 47	2339	37 12 45	2344	35 27 50	2350	33 43 3	2355

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	34° 1′ 21″	2748	35° 36′ 57″	2741	37° 12′ 42″	2734	38° 48′ 37″	2728
	Fomalhaut	E.	53 45 19	3175	52 18 40	3206	50 52 38	3241	49 27 17	3282
	α Pegasi	E.	67 28 5	2598	65 49 7	2597	64 10 8	2597	62 31 9	2598
2	Sun	W.	46 50 15	2698	48 26 57	2694	50 3 45	2689	51 40 39	2685
	Fomalhaut	E.	42 34 16	3573	41 15 12	3657	39 57 39	3758	38 41 48	3861
	α Pegasi	E.	54 17 1	2619	52 38 32	2626	51 0 13	2636	49 22 7	2648
	α Arietis	E.	96 58 40	2425	95 15 41	2421	93 32 36	2416	91 49 24	2412
3	Sun	W.	59 46 35	2666	61 24 1	2662	63 1 32	2659	64 39 7	2656
	Venus	W.	25 46 20	2863	27 19 0	2855	28 52 4	2848	30 25 29	2834
	α Pegasi	E.	41 16 29	2740	39 40 42	2766	38 5 32	2801	36 31 5	2840
	α Arietis	E.	83 12 5	2396	81 28 25	2394	79 44 41	2391	78 0 54	2390
4	Sun	W.	72 47 56	2643	74 25 52	2642	76 3 50	2640	77 41 51	2638
	Venus	W.	38 16 27	2785	39 51 14	2779	41 26 9	2772	43 1 13	2767
	α Arietis	E.	69 21 30	2386	67 37 34	2385	65 53 38	2385	64 9 42	2386
	Mars	E.	101 49 43	2216	100 1 38	2213	98 13 30	2211	96 25 19	2210
	Aldebaran	E.	102 23 31	2320	100 38 0	2317	98 52 26	2316	97 6 50	2314
5	Sun	W.	85 52 27	2632	87 30 39	2630	89 8 53	2629	90 47 8	2629
	Venus	W.	50 58 8	2746	52 33 47	2744	54 9 29	2741	55 45 15	2738
	α Aquilæ	W.	45 23 49	3148	46 51 1	3099	48 19 12	3055	49 48 17	3016
	α Arietis	E.	55 30 29	2396	53 46 48	2398	52 3 11	2403	50 19 40	2407
	Mars	E.	87 23 57	2204	85 35 36	2204	83 47 14	2204	81 58 52	2203
	Aldebaran	E.	88 18 13	2307	86 32 24	2306	84 46 33	2305	83 0 41	2305
6	Sun	W.	98 58 34	2627	100 36 52	2627	102 15 10	2627	103 53 28	2628
	Venus	W.	63 44 48	2730	65 20 48	2729	66 56 50	2728	68 32 53	2728
	α Aquilæ	W.	57 24 25	2871	58 57 21	2849	60 30 45	2831	62 4 33	2814
	α Arietis	E.	41 44 8	2444	40 1 36	2455	38 19 20	2468	36 37 22	2484
	Mars	E.	72 56 55	2203	71 8 32	2204	69 20 10	2204	67 31 49	2206
	Aldebaran	E.	74 11 13	2303	72 25 18	2303	70 39 23	2303	68 53 28	2304
7	Sun	W.	112 4 45	2632	113 42 56	2633	115 21 6	2635	116 59 13	2637
	Venus	W	76 33 12	2726	78 9 15	2729	79 45 16	2730	81 21 16	2732
	α Aquilæ	W.	69 58 24	2752	71 33 55	2744	73 9 36	2738	74 45 26	2732
	Fomalhaut	W.	42 47 44	3419	44 9 39	3351	45 32 52	3289	46 57 16	3235
	α Arietis	E.	28 14 10	2609	26 35 27	2651	24 57 41	2701	23 21 3	2766
	Mars	E.	58 30 31	2212	56 42 22	2214	54 54 16	2217	53 6 14	2220
	Aldebaran	E.	60 4 6	2308	58 18 18	2309	56 32 32	2311	54 46 48	2312
8	Sun	W.	125 9 7	2649	126 46 55	2653	128 24 38	2657	130 2 16	2660
	Venus	W.	89 20 44	2741	90 56 29	2744	92 32 10	2748	94 7 46	2751
	α Aquilæ	W.	82 46 7	2717	84 22 24	2717	85 58 41	2719	87 34 56	2721
	Fomalhaut	W.	54 13 17	3039	55 42 41	3012	57 12 39	2987	58 43 8	2965
	Mars	E.	44 7 13	2238	42 19 42	2243	40 32 19	2248	38 45 3	2254
	Aldebaran	E.	45 58 51	2324	44 13 27	2328	42 28 8	2332	40 42 55	2336
	Pollux	E.	88 47 47	2403	87 4 17	2406	85 20 51	2410	83 37 30	2412
9	α Aquilæ	W.	95 35 8	2744	97 10 49	2752	98 46 20	2760	100 21 40	2769
	Fomalhaut	W.	66 21 21	2891	67 53 51	2882	69 26 33	2874	70 59 25	2869
	α Pegasi	W.	47 53 17	2636	49 31 23	2626	51 9 43	2617	52 48 15	2610
	Mars	E.	29 51 19	2296	28 5 14	2309	26 19 27	2323	24 34 1	2338
	Aldebaran	E.	31 58 24	2361	30 13 53	2368	28 29 32	2376	26 45 23	2384

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Pollux	E.	81° 54′ 13″	2417	80° 11′ 2″	2421	78° 27′ 57″	2426	76° 45′ 0″	2431
10	Fomalhaut	W.	72 32 24	2864	74 5 29	2861	75 38 38	2859	77 11 50	2856
	α Pegasi	W.	54 26 57	2604	56 5 46	2600	57 44 41	2596	59 23 41	2595
	Aldebaran	E.	25 1 26	2394	23 17 43	2404	21 34 14	2417	19 51 3	2431
	Pollux	E.	68 12 18	2465	66 30 15	2473	64 48 24	2482	63 6 45	2492
	Regulus	E.	104 35 46	2379	102 51 41	2384	101 7 43	2390	99 23 54	2396
11	Fomalhaut	W.	84 57 34	2872	86 30 29	2877	88 3 17	2884	89 35 56	2892
	α Pegasi	W.	67 38 51	2599	69 17 47	2603	70 56 38	2607	72 35 23	2612
	α Arietis	W.	24 15 40	2780	25 50 34	2745	27 26 14	2718	29 2 30	2696
	Pollux	E.	54 42 10	2549	53 2 5	2564	51 22 20	2579	49 42 56	2595
	Regulus	E.	90 47 1	2429	89 4 8	2437	87 21 26	2446	85 38 56	2453
12	Fomalhaut	W.	97 16 12	2947	98 47 31	2962	100 18 32	2977	101 49 13	2993
	α Pegasi	W.	80 47 9	2646	82 25 1	2655	84 2 41	2664	85 40 9	2674
	α Arietis	W.	37 9 7	2649	38 46 56	2646	40 24 49	2645	42 2 43	2646
	Pollux	E.	41 32 1	2696	39 55 16	2722	38 19 6	2750	36 43 33	2781
	Regulus	E.	77 9 29	2500	75 28 16	2510	73 47 16	2520	72 6 31	2531
13	α Pegasi	W.	93 44 1	2730	95 20 1	2742	96 55 45	2755	98 31 12	2769
	α Arietis	W.	50 11 15	2669	51 48 37	2676	53 25 49	2684	55 2 51	2692
	Mars	W.	20 4 32	2579	21 43 56	2575	23 23 25	2575	25 2 54	2577
	Aldebaran	W.	16 24 27	2633	18 2 37	2633	19 40 47	2636	21 18 54	2640
	Pollux	E.	28 57 24	2998	27 27 9	3060	25 58 11	3133	24 30 42	3219
	Regulus	E.	63 46 37	2589	62 7 27	2601	60 28 34	2614	58 49 58	2626
14	α Arietis	W.	63 5 3	2740	64 40 50	2750	66 16 23	2761	67 51 42	2772
	Mars	W.	33 18 51	2610	34 57 32	2620	36 36 0	2629	38 14 15	2640
	Aldebaran	W.	29 27 4	2685	31 4 4	2695	32 40 50	2706	34 17 22	2717
	Regulus	E.	50 41 23	2694	49 4 35	2708	47 28 6	2723	45 51 57	2738
	Spica	E.	104 17 16	2662	102 39 45	2675	101 2 31	2688	99 25 35	2701
15	α Arietis	W.	75 44 38	2829	77 18 28	2842	78 52 2	2853	80 25 21	2865
	Mars	W.	46 21 53	2695	47 58 39	2707	49 35 10	2719	51 11 25	2730
	Aldebaran	W.	42 16 13	2775	43 51 13	2788	45 25 57	2800	47 0 25	2811
	Regulus	E.	37 56 4	2815	36 21 55	2831	34 48 8	2849	33 14 44	2866
	Spica	E.	91 25 6	2764	89 49 51	2776	88 14 52	2789	86 40 10	2801
	Saturn	E.	97 41 16	2800	96 6 48	2812	94 32 36	2825	92 58 41	2838
16	α Arietis	W.	88 8 5	2924	89 39 53	2936	91 11 26	2948	92 42 44	2959
	Mars	W.	59 8 51	2788	60 43 34	2800	62 18 2	2811	63 52 16	2822
	Aldebaran	W.	54 48 56	2870	56 21 53	2881	57 54 36	2893	59 27 4	2904
	Regulus	E.	25 33 42	2969	24 2 51	2995	22 32 32	3023	21 2 48	3055
	Spica	E.	78 50 40	2862	77 17 33	2873	75 44 40	2885	74 12 2	2897
	Saturn	E.	85 13 4	2899	83 40 44	2910	82 8 38	2922	80 36 47	2933
17	Mars	W.	71 39 53	2874	73 12 45	2884	74 45 24	2894	76 17 51	2903
	Aldebaran	W.	67 5 59	2956	68 37 7	2965	70 8 3	2974	71 38 48	2983
	Pollux	W.	26 39 50	3410	28 1 55	3376	29 24 39	3347	30 47 56	3325
	Spica	E.	66 32 24	2950	65 1 8	2959	63 30 4	2969	61 59 12	2977
	Saturn	E.	73 1 0	2986	71 30 30	2996	70 0 12	3005	68 30 6	3015
	Sun	E.	130 21 16	3343	128 57 54	3353	127 34 44	3364	126 11 46	3373
18	Mars	W.	83 57 17	2944	85 28 40	2952	86 59 53	2959	88 30 57	2965

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Pollux	E.	75° 2′ 10″	2437	73° 19′ 28″	2443	71° 36′ 55″	2450	69° 54′ 32″	2457
10	Fomalhaut	W.	78 45 3	2859	80 18 15	2860	81 51 25	2862	83 24 32	2866
	a Pegasi	W.	61 2 43	2594	62 41 46	2594	64 20 49	2595	65 59 51	2596
	Aldebaran	E.	18 8 12	2448	16 25 46	2470	14 43 51	2498	13 2 35	2537
	Pollux	E.	61 25 20	2502	59 44 9	2512	58 3 13	2524	56 22 33	2536
	Regulus	E.	97 40 13	2403	95 56 41	2408	94 13 18	2415	92 30 4	2422
11	Fomalhaut	W.	91 8 25	2901	92 40 42	2911	94 12 47	2923	95 44 37	2935
	a Pegasi	W.	74 14 1	2616	75 52 31	2624	77 30 53	2631	79 9 6	2638
	a Arietis	W.	30 39 15	2679	32 16 23	2667	33 53 47	2656	35 31 23	2652
	Pollux	E.	48 3 54	2612	46 25 16	2631	44 47 3	2651	43 9 17	2673
	Regulus	E.	83 56 37	2462	82 14 31	2471	80 32 37	2480	78 50 56	2490
12	Fomalhaut	W.	103 19 34	3011	104 49 33	3029	106 19 10	3048	107 48 23	3069
	a Pegasi	W.	87 17 24	2684	88 54 25	2695	90 31 12	2706	92 7 44	2717
	a Arietis	W.	43 40 36	2649	45 18 25	2653	46 56 8	2657	48 33 45	2663
	Pollux	E.	35 8 40	2815	33 34 32	2853	32 1 13	2895	30 28 48	2943
	Regulus	E.	70 26 1	2542	68 45 46	2553	67 5 47	2565	65 26 4	2577
13	a Pegasi	W.	100 6 21	2782	101 41 12	2797	103 15 44	2811	104 49 58	2825
	a Arietis	W.	56 39 42	2701	58 16 21	2710	59 52 48	2719	61 29 2	2729
	Mars	W.	26 42 21	2581	28 21 42	2587	30 0 55	2594	31 39 58	2601
	Aldebaran	W.	22 56 54	2648	24 34 44	2656	26 12 23	2665	27 49 50	2675
	Pollux	E.	23 4 55	3321	21 41 8	3444	20 19 41	3593	19 0 59	3777
	Regulus	E.	57 11 39	2640	55 33 38	2653	53 55 55	2666	52 18 30	2680
14	a Arietis	W.	69 26 47	2783	71 1 37	2795	72 36 12	2805	74 10 33	2818
	Mars	W.	39 52 16	2650	41 30 3	2661	43 7 35	2672	44 44 52	2684
	Aldebaran	W.	35 53 39	2729	37 29 41	2741	39 5 27	2752	40 40 58	2764
	Regulus	E.	44 16 7	2752	42 40 36	2767	41 5 25	2782	39 30 34	2798
	Spica	E.	97 48 56	2713	96 12 33	2725	94 36 27	2738	93 0 38	2751
15	a Arietis	W.	81 58 25	2877	83 31 13	2889	85 3 46	2901	86 36 3	2913
	Mars	W.	52 47 25	2741	54 23 10	2753	55 58 39	2765	57 33 53	2777
	Aldebaran	W.	48 34 38	2823	50 8 36	2835	51 42 18	2848	53 15 44	2859
	Regulus	E.	31 41 42	2885	30 9 4	2905	28 36 51	2924	27 5 3	2946
	Spica	E.	85 5 44	2814	83 31 34	2827	81 57 41	2838	80 24 3	2850
	Saturn	E.	91 25 2	2850	89 51 39	2862	88 18 32	2874	86 45 40	2887
16	a Arietis	W.	94 13 48	2970	95 44 38	2981	97 15 14	2993	98 45 36	3004
	Mars	W.	65 26 15	2833	67 0 0	2844	68 33 31	2854	70 6 49	2865
	Aldebaran	W.	60 59 18	2915	62 31 18	2925	64 3 5	2936	65 34 38	2946
	Regulus	E.	19 33 43	3092	18 5 24	3137	16 37 59	3190	15 11 38	3256
	Spica	E.	72 39 39	2908	71 7 30	2919	69 35 35	2929	68 3 53	2939
	Saturn	E.	79 5 10	2945	77 33 48	2955	76 2 39	2966	74 31 43	2976
17	Mars	W.	77 50 6	2912	79 22 9	2920	80 54 2	2929	82 25 44	2936
	Aldebaran	W.	73 9 22	2992	74 39 45	3001	76 9 57	3008	77 40 0	3016
	Pollux	W.	32 11 39	3306	33 35 44	3289	35 0 8	3276	36 24 47	3265
	Spica	E.	60 28 31	2986	58 58 1	2994	57 27 41	3003	55 57 32	3010
	Saturn	E.	67 0 12	3024	65 30 29	3032	64 0 56	3041	62 31 34	3048
	SUN	E.	124 48 59	3382	123 26 22	3392	122 3 56	3400	120 41 39	3408
18	Mars	W.	90 1 54	2971	91 32 43	2977	93 3 25	2982	94 34 0	2987

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Aldebaran	W.	79° 9′ 53″	3023	80° 39′ 37″	3030	82° 9′ 13″	3036	83° 38′ 41″	3043
	Pollux	W.	37 49 40	3255	39 14 44	3248	40 39 56	3242	42 5 16	3236
	Spica	E.	54 27 32	3018	52 57 42	3025	51 28 0	3031	49 58 26	3037
	Saturn	E.	61 2 21	3058	59 33 18	3064	58 4 24	3070	56 35 38	3076
	Sun	E.	119 19 31	3415	117 57 32	3423	116 35 41	3430	115 13 58	3436
19	Mars	W.	96 4 29	2992	97 34 52	2996	99 5 10	2999	100 35 24	3002
	Aldebaran	W.	91 4 17	3066	92 33 8	3069	94 1 55	3073	95 30 38	3075
	Pollux	W.	49 13 22	3216	50 39 12	3213	52 5 6	3209	53 31 4	3207
	Spica	E.	42 32 17	3061	41 3 20	3065	39 34 27	3068	38 5 38	3070
	Saturn	E.	49 13 34	3103	47 45 28	3106	46 17 26	3110	44 49 28	3113
	Sun	E.	108 27 2	3462	107 5 55	3465	105 44 52	3469	104 23 53	3471
20	Pollux	W.	60 41 44	3191	62 8 4	3188	63 34 28	3184	65 0 56	3180
	Regulus	W.	23 39 51	3186	25 6 17	3173	26 32 58	3163	27 59 52	3153
	Spica	E.	30 42 7	3076	29 13 28	3075	27 44 48	3074	26 16 7	3073
	Saturn	E.	37 30 27	3123	36 2 45	3124	34 35 4	3124	33 7 24	3124
	Sun	E.	97 39 29	3477	96 18 39	3477	94 57 49	3475	93 36 57	3473
21	Pollux	W.	72 14 38	3155	73 41 41	3149	75 8 51	3143	76 36 9	3136
	Regulus	W.	35 17 5	3110	36 45 2	3103	38 13 8	3095	39 41 24	3086
	Spica	E.	18 52 7	3059	17 23 7	3056	15 54 3	3052	14 24 54	3047
	Saturn	E.	25 49 3	3124	24 21 22	3124	22 53 41	3124	21 26 1	3125
	Sun	E.	86 51 59	3459	85 30 48	3454	84 9 32	3448	82 48 10	3442
22	Pollux	W.	83 54 47	3098	85 22 59	3089	86 51 22	3080	88 19 56	3071
	Regulus	W.	47 5 24	3041	48 34 46	3031	50 4 20	3022	51 34 6	3011
	Sun	E.	75 59 27	3406	74 37 17	3396	73 14 56	3387	71 52 25	3378
23	Pollux	W.	95 45 43	3020	97 15 31	3009	98 45 33	2998	100 15 48	2987
	Regulus	W.	59 6 19	2954	60 37 29	2942	62 8 55	2930	63 40 36	2916
	Sun	E.	64 56 54	3323	63 33 9	3311	62 9 10	3298	60 44 56	3286
24	Regulus	W.	71 23 15	2849	72 56 39	2835	74 30 22	2820	76 4 24	2805
	Spica	W.	17 31 10	2831	19 4 57	2817	20 39 3	2802	22 13 28	2788
	Sun	E.	53 39 58	3217	52 14 9	3204	50 48 4	3188	49 21 41	3174
25	Regulus	W.	83 59 24	2730	85 35 24	2715	87 11 44	2700	88 48 24	2684
	Saturn	W.	23 18 29	2777	24 53 27	2757	26 28 51	2738	28 4 40	2720
	Spica	W.	30 10 23	2713	31 46 46	2698	33 23 29	2682	35 0 33	2666
	Sun	E.	42 5 23	3100	40 37 13	3086	39 8 46	3071	37 40 1	3057
26	Regulus	W.	96 56 56	2607	98 35 41	2593	100 14 46	2577	101 54 12	2563
	Saturn	W.	36 9 49	2631	37 48 2	2615	39 26 37	2598	41 5 35	2582
	Spica	W.	43 11 4	2590	44 50 13	2574	46 29 43	2559	48 9 35	2544
	Sun	E.	30 12 1	2992	28 41 38	2980	27 11 0	2970	25 40 10	2962
30	Sun	W.	21 51 5	2639	23 29 7	2624	25 7 30	2610	26 46 11	2596
	α Pegasi	E.	51 49 33	2514	50 8 39	2525	48 28 0	2538	46 47 39	2553
	α Arietis	E.	94 23 0	2294	92 36 52	2290	90 50 38	2286	89 4 18	2282
31	Sun	W.	35 2 49	2563	36 42 35	2559	38 22 26	2556	40 2 21	2554
	α Pegasi	E.	38 32 41	2684	36 55 39	2724	35 19 31	2772	33 44 26	2828
	α Arietis	E.	80 11 33	2272	78 24 53	2272	76 38 13	2272	74 51 33	2274
	Mars	E.	106 30 22	2202	104 41 57	2201	102 53 31	2200	101 5 4	2201

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	Aldebaran	W.	85° 8′ 1″	3048	86° 37′ 14″	3053	88° 6′ 21″	3058	89° 35′ 22″	3063
	Pollux	W.	43 30 43	3231	44 56 16	3226	46 21 54	3223	47 47 36	3220
	Spica	E.	48 28 59	3043	46 59 39	3048	45 30 26	3053	44 1 19	3057
	Saturn	E.	55 6 59	3082	53 38 28	3088	52 10 4	3093	50 41 46	3098
	Sun	E.	113 52 22	3442	112 30 53	3448	111 9 31	3453	109 48 14	3457
19	Mars	W.	102 5 34	3005	103 35 41	3008	105 5 44	3009	106 35 45	3010
	Aldebaran	W.	96 59 18	3078	98 27 55	3078	99 56 31	3079	101 25 6	3080
	Pollux	W.	54 57 5	3204	56 23 10	3201	57 49 18	3198	59 15 29	3196
	Spica	E.	36 36 52	3072	35 8 8	3073	33 39 26	3075	32 10 46	3076
	Saturn	E.	43 21 34	3115	41 53 43	3118	40 25 55	3120	38 58 10	3122
	Sun	E.	103 2 56	3473	101 42 2	3475	100 21 10	3476	99 0 19	3477
20	Pollux	W.	66 27 29	3175	67 54 8	3171	69 20 52	3166	70 47 42	3161
	Regulus	W.	29 26 58	3144	30 54 14	3136	32 21 41	3127	33 49 18	3119
	Spica	E.	24 47 25	3071	23 18 40	3069	21 49 53	3066	20 21 2	3063
	Saturn	E.	31 39 44	3124	30 12 4	3124	28 44 24	3124	27 16 44	3124
	Sun	E.	92 16 3	3471	90 55 7	3469	89 34 8	3466	88 13 5	3463
21	Pollux	W.	78 3 35	3129	79 31 9	3122	80 58 52	3114	82 26 45	3106
	Regulus	W.	41 9 51	3078	42 38 28	3069	44 7 16	3060	45 36 14	3051
	Spica	E.	12 55 39	3042	11 26 18	3037	9 56 51	3033	8 27 19	3030
	Saturn	E.	19 58 22	3128	18 30 46	3133	17 3 16	3139	15 35 54	3148
	Sun	E.	81 26 41	3436	80 5 5	3429	78 43 21	3421	77 21 28	3414
22	Pollux	W.	89 48 41	3061	91 17 38	3052	92 46 47	3041	94 16 9	3031
	Regulus	W.	53 4 5	3000	54 34 18	2989	56 4 44	2978	57 35 24	2966
	Sun	E.	70 29 43	3367	69 6 49	3357	67 43 43	3346	66 20 25	3335
23	Pollux	W.	101 46 17	2975	103 17 1	2964	104 47 59	2952	106 19 12	2940
	Regulus	W.	65 12 34	2903	66 44 49	2891	68 17 20	2876	69 50 9	2863
	Sun	E.	59 20 28	3272	57 55 44	3259	56 30 45	3246	55 5 30	3231
24	Regulus	W.	77 38 45	2791	79 13 25	2775	80 48 25	2760	82 23 45	2746
	Spica	W.	23 48 12	2773	25 23 15	2758	26 58 38	2744	28 34 20	2728
	Sun	E.	47 55 1	3159	46 28 3	3144	45 0 47	3130	43 33 14	3115
25	Regulus	W.	90 25 25	2669	92 2 47	2654	93 40 29	2638	95 18 32	2623
	Saturn	W.	29 40 53	2701	31 17 31	2684	32 54 33	2666	34 31 59	2648
	Spica	W.	36 37 58	2652	38 15 43	2636	39 53 49	2621	41 32 16	2606
	Sun	E.	36 10 59	3043	34 41 40	3029	33 12 3	3016	31 42 10	3003
26	Regulus	W.	103 33 58	2548	105 14 4	2533	106 54 31	2519	108 35 18	2505
	Saturn	W.	42 44 55	2566	44 24 37	2550	46 4 41	2535	47 45 6	2519
	Spica	W.	49 49 47	2529	51 30 20	2515	53 11 13	2499	54 52 27	2485
	Sun	E.	24 9 9	2954	22 37 59	2950	21 6 43	2949	19 35 26	2952
30	Sun	W.	28 25 8	2589	30 4 18	2581	31 43 39	2574	33 23 10	2568
	α Pegasi	E.	45 7 39	2572	43 28 5	2598	41 49 0	2618	40 10 30	2649
	α Arietis	E.	87 17 52	2279	85 31 22	2277	83 44 48	2275	81 58 12	2273
31	Sun	W.	41 42 19	2552	43 22 20	2551	45 2 22	2551	46 42 25	2550
	α Pegasi	E.	32 10 35	2894	30 38 9	2978	29 7 22	3067	27 38 32	3179
	α Arietis	E.	73 4 55	2275	71 18 19	2277	69 31 46	2280	67 45 17	2284
	Mars	E.	99 16 38	2202	97 28 13	2202	95 39 49	2204	93 51 27	2204

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	15 33 29.12	11·377	−16 16 18.2	42·21	20 52.4	1	18 4 53.82	12·880	−21 45 43.8	6·52	21 22.1
2	15 38 2.93	11·441	16 23 03.0	41·51	20 53.1	2	18 10 2.03	12·851	21 48 2.5	5·02	21 23.3
3	15 42 38.27	11·504	16 49 31.0	40·79	20 53.7	3	18 15 10.71	12·869	21 49 44.9	3·50	21 24.5
4	15 47 15.12	11·566	17 5 41.3	40·03	20 54.4	4	18 20 19.77	12·884	21 50 50.5	1·96	21 25.7
5	15 51 53.45	11·627	17 21 32.8	39·24	20 55.2	5	18 25 29.15	12·897	21 51 19.3	−0·42	21 27.0
6	15 56 33.24	11·687	17 37 4.9	38·41	20 55.9	6	18 30 38.83	12·908	21 51 10.9	+1·12	21 28.2
7	16 1 14.46	11·746	17 52 16.5	37·53	20 56.6	7	18 35 48.75	12·916	21 50 25.3	2·66	21 29.4
8	16 5 57.09	11·805	18 7 6.8	36·63	20 57.4	8	18 40 58.83	12·922	21 49 2.5	4·20	21 30.5
9	16 10 41.12	11·863	18 21 35.1	35·70	20 58.2	9	18 46 9.02	12·927	21 47 2.3	5·78	21 31.8
10	16 15 26.53	11·916	18 35 40.5	34·73	20 59.0	10	18 51 19.26	12·926	21 44 24.9	7·35	21 33.1
11	16 20 13.27	11·975	18 49 22.3	33·73	20 59.9	11	18 56 29.49	12·925	21 41 10.2	8·89	21 34.3
12	16 25 1.35	12·030	19 2 39.7	32·70	21 0.8	12	19 1 39.67	12·922	21 37 18.1	10·45	21 35.5
13	16 29 50.72	12·083	19 15 32.0	31·64	21 1.6	13	19 6 49.76	12·917	21 32 48.4	12·01	21 36.7
14	16 34 41.37	12·136	19 27 58.2	30·54	21 2.5	14	19 11 59.69	12·909	21 27 41.7	13·55	21 38.0
15	16 29 33.26	12·187	19 39 57.9	29·43	21 3.5	15	19 17 9.42	12·900	21 21 57.7	15·11	21 39.2
16	16 44 26.37	12·237	19 51 30.2	28·28	21 4.5	16	19 22 18.91	12·888	21 15 36.5	16·62	21 40.4
17	16 49 20.64	12·285	20 2 34.4	27·07	21 5.5	17	19 27 28.09	12·875	21 8 38.1	18·19	21 41.6
18	16 54 16.07	12·332	20 13 9.8	25·86	21 6.5	18	19 32 36.92	12·859	21 1 3.0	19·72	21 42.8
19	16 59 12.63	12·379	20 23 16.0	24·63	21 7.5	19	19 37 45.35	12·842	20 52 51.2	21·23	21 44.0
20	17 4 10.30	12·425	20 32 52.3	23·37	21 8.5	20	19 42 53.35	12·828	20 44 3.1	22·75	21 45.2
21	17 9 9.03	12·468	20 41 57.8	22·07	21 9.6	21	19 48 0.89	12·803	20 34 39.0	24·25	21 46.4
22	17 14 8.80	12·511	20 50 32.0	20·76	21 10.7	22	19 53 7.92	12·781	20 24 38.8	25·71	21 47.5
23	17 19 9.56	12·553	20 58 34.5	19·42	21 11.8	23	19 58 14.41	12·757	20 14 2.9	27·22	21 48.7
24	17 24 11.27	12·589	21 6 4.5	18·07	21 12.9	24	20 3 20.31	12·732	20 2 51.9	28·66	21 49.9
25	17 29 13.88	12·626	21 13 1.9	16·69	21 14.0	25	20 8 25.59	12·706	19 51 6.2	30·12	21 51.0
26	17 34 17.35	12·662	21 19 25.9	15·29	21 15.1	26	20 13 30.22	12·679	19 38 45.7	31·56	21 52.1
27	17 39 21.63	12·697	21 25 16.1	13·87	21 16.2	27	20 18 34.19	12·650	19 25 51.0	32·97	21 53.2
28	17 44 26.73	12·727	21 30 31.9	12·48	21 17.3	28	20 23 37.45	12·620	19 12 22.7	34·39	21 54.3
29	17 49 32.54	12·756	21 35 12.9	10·97	21 18.5	29	20 28 39.97	12·588	18 58 20.9	35·77	21 55.4
30	17 54 39.04	12·783	21 39 18.7	9·52	21 19.7	30	20 33 41.70	12·555	18 43 46.5	37·10	21 56.5
31	17 59 46.15	12·804	21 42 49.2	8·02	21 20.9	31	20 38 42.61	12·521	18 28 39.9	38·44	21 57.5
32	18 4 53.82	12·880	−21 45 43.8	6·52	21 22.1	32	20 43 42.72	12·487	−18 13 1.3	39·76	21 58.6

Day of Month, 1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiam. ″ 10.0	″ 9.6	″ 9.2	″ 8.9	″ 8.6	″ 8.3	″ 8.0
Hor. Par. 10.1	9.7	9.3	8.9	8.6	8.3	8.1

Day of the Month,	5th.	10th.	15th.	20th.	25th.
Semidiameter	″ 7.8	″ 7.5	″ 7.3	″ 7.1	″ 6.9
Horizontal Parallax	7.8	7.6	7.4	7.2	7.0

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.			Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.			Var. of Dec. for 1 Hour. Noon.	Meridian Passage.	
	h	m	s	s	°	′	″	″	h	m
1	20	33	41.70	12·555	−18	43	46.5	37·10	21	56.5
2	20	38	42.61	12·521	18	28	39.9	38·44	21	57.5
3	20	43	42.72	12·487	18	13	1.3	39·76	21	58.6
4	20	48	42.00	12·451	17	56	51.4	41·04	21	59.7
5	20	53	40.40	12·410	17	40	10.7	42·32	22	0.7
6	20	58	37.92	12·375	17	22	59.8	43·57	22	1.7
7	21	3	34.55	12·338	17	5	19.3	44·81	25	2.7
8	21	8	30.26	12·302	16	47	9.7	45·99	22	3.7
9	21	13	25.05	12·263	16	28	31.7	47·16	22	4.7
10	21	18	18.89	12·223	16	9	25.7	48·31	22	5.6
11	21	23	11.80	12·184	15	49	52.5	49·43	22	6.5
12	21	28	3.76	12·145	15	29	52.7	50·50	22	7.4
13	21	32	54.78	12·106	15	9	26.8	51·60	22	8.3
14	21	37	44.85	12·067	14	48	35.6	52·65	22	9.2
15	21	42	34.00	12·028	14	27	19.6	53·67	22	10.0
16	21	47	22.20	11·989	14	5	39.3	54·67	22	10.8
17	21	52	9.48	11·950	13	43	35.6	55·63	22	11.6
18	21	56	55.83	11·910	13	21	9.0	56·56	22	12.4
19	22	1	41.30	11·873	12	58	20.1	57·49	22	13.2
20	22	6	25.84	11·838	12	35	9.8	58·36	22	14.0
21	22	11	9.55	11·808	12	11	38.5	59·22	22	14.8
22	22	15	52.41	11·768	11	47	46.9	60·05	22	15.5
23	22	20	34.43	11·738	11	23	35.6	60·86	22	16.3
24	22	25	15.62	11·700	10	59	5.4	61·64	22	17.0
25	22	29	56.04	11·668	10	34	16.9	62·38	22	17.8
26	22	34	35.68	11·636	10	9	10.8	63·10	22	18.5
27	22	39	14.59	11·605	9	43	47.8	63·79	22	19.2
28	22	43	52.75	11·575	9	18	8.5	64·45	22	19.9
29	22	48	30.22	11·547	8	52	13.7	65·08	22	20.6
30	22	53	7.02	11·520	8	26	4.1	65·69	22	21.3
31	22	57	43.19	11·493	7	59	40.2	66·28	22	21.9
32	23	2	18.71	11·467	− 7	33	2.8	66·82	22	22.5

Day of Month, 1st.	6th.	11th.	16th.	21st.	26th.	31st.
″	″	″	″	″	″	″
Semidiam. 6.8	6.6	6.4	6.3	6.2	6.1	6.0
Hor. Par. 6.8	6.7	6.5	6.4	6.2	6.1	6.0

APRIL.

Day of Month.	Apparent Right Ascension. Noon.			Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.			Var. of Dec. for 1 Hour. Noon.	Meridian Passage.	
	h	m	s	s	°	′	″	″	h	m
1	23	2	18.71	11·467	− 7	33	2.8	66·82	22	22.5
2	23	6	53.65	11·443	7	6	12.7	67·33	22	23.1
3	23	11	28.02	11·420	6	39	10.6	67·83	22	23.7
4	23	16	1.85	11·399	6	11	56.9	68·29	22	24.3
5	23	20	35.17	11·378	5	44	32.5	68·72	22	25.0
6	23	25	8.03	11·358	5	16	58.2	69·11	22	25.6
7	23	29	40.43	11·341	4	49	14.8	69·49	22	26.2
8	23	34	12.40	11·324	4	21	22.7	69·83	22	26.8
9	23	38	43.98	11·309	3	53	22.8	70·14	22	27.4
10	23	43	15.23	11·295	3	25	15.6	70·43	22	27.9
11	23	47	46.16	11·282	2	57	1.8	70·69	22	28.5
12	23	52	16.80	11·271	2	28	42.1	70·92	22	29.1
13	23	56	47.17	11·261	2	0	17.2	71·13	22	29.7
14	0	1	17.36	11·253	1	31	47.8	71·30	22	30.2
15	0	5	47.36	11·247	1	3	14.6	71·44	22	30.7
16	0	10	17.25	11·243	0	34	38.3	71·56	22	31.3
17	0	14	47.04	11·240	− 0	5	59.5	71·65	22	31.8
18	0	19	16.78	11·238	+ 0	22	40.9	71·70	22	32.3
19	0	23	46.49	11·238	0	51	22.4	71·74	22	32.9
20	0	28	16.23	11·239	1	20	4.7	71·75	22	33.5
21	0	32	46.05	11·244	1	48	46.8	71·73	22	34.1
22	0	37	15.97	11·250	2	17	28.0	71·68	22	34.6
23	0	41	46.05	11·256	2	46	7.6	71·60	22	35.2
24	0	46	16.29	11·264	3	14	45.0	71·49	22	35.7
25	0	50	46.73	11·274	3	43	19.5	71·36	22	36.3
26	0	55	17.45	11·286	4	11	50.5	71·20	22	36.9
27	0	59	48.50	11·301	4	40	17.3	71·09	22	37.5
28	1	4	19.92	11·316	5	8	38.9	70·79	22	38.0
29	1	8	51.71	11·333	5	36	54.7	70·52	22	38.6
30	1	13	23.92	11·351	6	5	4.3	70·25	22	39.2
31	1	17	56.57	11·370	6	33	6.9	69·94	22	39.8
32	1	22	29.70	11·391	+ 7	1	1.7	69·60	22	40.5

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter	5.9	5.8	5.7	5.6	5.5	5.4
Hor. Parallax	5.9	5.8	5.7	5.6	5.6	5.5

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	1 17 56.57	11.370	+ 6 33 6.9	69.94	22 39.8	1	3 45 15.90	12.538	+18 59 4.4	45.61	23 5.4
2	1 22 29.70	11.391	7 1 1.7	69.60	22 40.5	2	3 50 17.40	12.585	19 17 4.3	44.36	23 6.5
3	1 27 3.36	11.415	7 28 47.7	69.23	22 41.1	3	3 55 20.01	12.631	19 34 33.6	43.07	23 7.6
4	1 31 37.55	11.437	7 56 24.7	68.83	22 41.7	4	4 0 23.73	12.678	19 51 31.7	41.76	23 8.8
5	1 36 12.34	11.462	8 23 51.9	68.40	22 42.4	5	4 5 28.56	12.724	20 7 58.1	40.43	23 10.0
6	1 40 47.75	11.489	8 51 8.4	67.94	22 43.1	6	4 10 34.48	12.768	20 23 52.3	39.07	23 11.2
7	1 45 23.81	11.516	9 18 13.2	67.44	22 43.8	7	4 15 41.44	12.811	20 39 13.4	37.67	23 12.4
8	1 50 0.55	11.545	9 45 5.9	66.93	22 44.5	8	4 20 49.45	12.854	20 54 0.7	36.25	23 13.7
9	1 54 38.01	11.576	10 11 46.1	66.39	22 45.2	9	4 25 58.44	12.896	21 8 13.6	34.81	23 14.9
10	1 59 16.21	11.606	10 38 13.0	65.83	22 45.8	10	4 31 8.42	12.935	21 21 51.7	33.35	23 16.1
11	2 3 55.17	11.640	11 4 25.7	65.21	22 46.5	11	4 36 19.34	12.974	21 34 54.5	31.87	23 17.4
12	2 8 34.93	11.674	11 30 23.3	64.58	22 47.2	12	4 41 31.21	13.013	21 47 21.3	30.36	23 18.6
13	2 13 15.53	11.709	11 56 5.3	63.91	22 47.9	13	4 46 43.98	13.050	21 59 11.7	28.83	23 19.9
14	2 17 56.99	11.746	12 21 31.0	63.22	22 48.7	14	4 51 57.65	13.087	22 10 25.2	27.27	23 21.1
15	2 22 39.34	11.783	12 46 39.7	62.49	22 49.5	15	4 57 12.19	13.122	22 21 1.2	25.71	23 22.4
16	2 27 22.60	11.821	13 11 30.5	61.73	22 50.3	16	5 2 27.53	13.154	22 30 59.2	24.12	23 23.8
17	2 32 6.79	11.861	13 36 2.6	60.94	22 51.1	17	5 7 43.61	13.185	22 40 18.9	22.51	23 25.1
18	2 36 51.94	11.900	14 0 15.5	60.13	22 51.9	18	5 13 0.42	13.214	22 48 59.7	20.88	23 26.5
19	2 41 38.10	11.944	14 24 8.7	57.29	22 52.8	19	5 18 17.92	13.242	22 57 1.3	19.24	23 27.8
20	2 46 25.27	11.986	14 47 41.5	58.42	22 53.7	20	5 23 36.08	13.269	23 4 23.3	17.58	23 29.2
21	2 51 13.47	12.030	15 10 53.0	57.52	22 54.6	21	5 28 54.85	13.293	23 11 5.2	15.90	23 30.6
22	2 56 2.72	12.074	15 33 42.3	56.57	22 55.5	22	5 34 14.15	13.314	23 17 6.7	14.22	23 32.0
23	3 0 53.04	12.119	15 56 8.5	55.61	22 56.4	23	5 39 33.94	13.334	23 22 27.6	12.52	23 33.4
24	3 5 44.46	12.165	16 18 11.4	54.62	22 57.3	24	5 44 54.20	13.352	23 27 7.7	10.81	23 34.7
25	3 10 36.98	12.211	16 39 50.3	53.60	22 58.2	25	5 50 14.86	13.368	23 31 6.5	9.09	23 36.1
26	3 15 30.60	12.257	17 1 4.3	52.54	22 59.2	26	5 55 35.88	13.384	23 34 24.0	7.36	23 37.5
27	3 20 25.34	12.304	17 21 52.5	51.46	23 0.2	27	6 0 57.21	13.394	23 36 59.9	5.62	23 38.9
28	3 25 21.20	12.350	17 42 14.4	50.35	23 1.2	28	6 6 18.80	13.403	23 38 54.0	3.89	23 40.3
29	3 30 18.18	12.397	18 2 9.3	49.21	23 2.2	29	6 11 40.56	13.409	23 40 6.2	2.14	23 41.8
30	3 35 16.28	12.444	18 21 36.4	48.03	23 3.2	30	6 17 2.44	13.412	23 40 36.6	+0.39	23 43.2
31	3 40 15.53	12.492	18 40 34.9	46.83	23 4.3	31	6 22 24.38	13.414	23 40 24.9	−1.36	23 44.6
32	3 45 15.90	12.538	+18 59 4.4	45.61	23 5.4	32	6 27 46.32	13.413	+23 39 31.1	3.12	23 46.0

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month,	4th.	9th.	14th.	19th.	24th.	29th.
	″	″	″	″	″	″		″	″	″	″	″	″
Semidiameter	5.4	5.3	5.2	5.2	5.1	5.1	Semidiameter	5.0	5.0	5.0	5.0	5.0	4.9
Hor. Parallax	5.4	5.3	5.3	5.2	5.2	5.1	Hor. Parallax	5.1	5.1	5.0	5.0	5.0	5.0

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	6 22 24.38	13 414	+23 40 24.9	1·36	23 44.6
2	6 27 46.32	13·418	23 39 31.1	3·12	23 46.0
3	6 33 8.20	13·409	23 37 55.2	4·87	23 47.4
4	6 38 29.97	13·403	23 35 37.4	6·62	23 48.9
5	6 43 51.56	13·396	23 32 37.5	8·37	23 50.3
6	6 49 12.93	13·385	23 28 55.5	10·12	23 51.7
7	6 54 34.01	13·371	23 24 31.8	11·86	23 53.1
8	6 59 54.74	13·356	23 19 26.5	13·60	23 54.5
9	7 5 15.08	13·338	23 13 39.6	15·32	23 55.9
10	7 10 34.97	13·318	23 7 11.2	17·03	23 57.3
11	7 15 54.37	13·296	23 0 2.1	18·73	23 58.7
12	7 21 13.22	13·272	22 52 12.4	20·42	
13	7 26 31.45	13·245	22 43 42.1	22·10	0 0.1
14	7 31 49.02	13·216	22 34 31.5	23·77	0 1.4
15	7 37 5.85	13·185	22 24 41.1	25·42	0 2.7
16	7 42 21.91	13·152	22 14 11.3	27·06	0 4.0
17	7 47 37.20	13·119	22 3 2.2	28·70	0 5.4
18	7 52 51.66	13·085	21 51 14.3	30·28	0 6.7
19	7 58 5.29	13·049	21 38 48.3	31·87	0 8.0
20	8 3 18.04	13·012	21 25 44.6	33·43	0 9.2
21	8 8 29.87	12·973	21 12 3.4	34·99	0 10.5
22	8 13 40.75	12·933	20 57 45.1	36·52	0 11.7
23	8 18 50.67	12·892	20 42 50.5	38·01	0 12.9
24	8 23 59.60	12·850	20 27 20.4	39·49	0 14.1
25	8 29 7.49	12·806	20 11 15.2	40·94	0 15.3
26	8 34 14.32	12·762	19 54 35.1	42·38	0 16.4
27	8 39 20.10	12·718	19 37 20.8	43·79	0 17.5
28	8 44 24.80	12·672	19 19 33.1	45·18	0 18.7
29	8 49 28.40	12·626	19 1 12.4	46·53	0 19.9
30	8 54 30.88	12·580	18 42 19.3	47·87	0 21.1
31	8 59 32.26	12·535	18 22 54.7	49·17	0 22.2
32	9 4 32.56	12·488	+18 2 59.3	50·44	0 23.3

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	9 4 32.56	12·488	+18 2 59.3	50·44	0 23.3
2	9 9 31.72	12·440	17 42 33.7	51·69	0 24.3
3	9 14 29.71	12·392	17 21 38.4	52·91	0 25.3
4	9 19 26.57	12·345	17 0 14.2	54·09	0 26.3
5	9 24 22.29	12·298	16 38 21.7	55·26	0 27.2
6	9 29 16.88	12·252	16 16 1.8	56·38	0 28.2
7	9 34 10.41	12·207	15 53 15.3	57·48	0 29.2
8	9 39 2.81	12·159	15 30 2.6	58·56	0 30.1
9	9 43 54.06	12·112	15 6 24.3	59·61	0 31.0
10	9 48 44.20	12·066	14 42 21.4	60·62	0 31.9
11	9 53 33.25	12·022	14 17 54.6	61·60	0 32.8
12	9 58 21.26	11·978	13 53 4.6	62·55	0 33.7
13	10 3 8.21	11·935	13 27 52.0	63·48	0 34.5
14	10 7 54.14	11·892	13 2 17.7	64·37	0 35.3
15	10 12 39.06	11·851	12 36 22.3	65·23	0 36.1
16	10 17 23.02	11·811	12 10 6.6	66·06	0 36.9
17	10 22 6.01	11·772	11 43 31.3	66·86	0 37.7
18	10 26 48.08	11·734	11 16 37.1	67·64	0 38.4
19	10 31 29.25	11·696	10 49 24.6	68·38	0 39.1
20	10 36 9.55	11·661	10 21 54.7	69·09	0 39.8
21	10 40 49.00	11·627	9 54 8.3	69·77	0 40.5
22	10 45 27.66	11·594	9 26 5.7	70·43	0 41.3
23	10 50 5.55	11·564	8 57 47.6	71·06	0 42.0
24	10 54 42.74	11·534	8 29 14.8	71·65	0 42.7
25	10 59 19.20	11·505	8 0 28.3	72·21	0 43.4
26	11 3 55.01	11·479	7 31 28.8	72·73	0 44.0
27	11 8 30.19	11·453	7 2 17.0	73·23	0 44.6
28	11 13 4.78	11·429	6 32 53.5	73·71	0 45.3
29	11 17 38.81	11·407	6 3 19.0	74·15	0 45.9
30	11 22 12.31	11·386	5 33 34.5	74·55	0 46.5
31	11 26 45.34	11·367	5 3 40.5	74·93	0 47.1
32	11 31 17.94	11·349	+ 4 33 37.9	75·27	0 47.7

Day of the Month,	4th.	9th.	14th.	19th.	24th.	29th.
	″	″	″	″	″	″
Semidiameter	4.9	4.9	4.9	4.9	4.9	4.9
Hor. Parallax	5.0	5.0	5.0	5.0	5.0	5.0

Day of the Month,	3d.	8th.	13th.	18th.	23d.	28th.
	″	″	″	″	″	″
Semidiameter	4.9	5.0	5.0	5.0	5.0	5.0
Hor. Parallax	5.0	5.0	5.0	5.0	5.1	5.1

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 31 17.94	11·349	+ 4 33 37.9	75·27	0 47.7
2	11 35 50.11	11·333	4 3 27.3	75·59	0 48.3
3	11 40 21.93	11·318	3 33 9.4	75·88	0 48.9
4	11 44 53.41	11·305	3 2 45.0	76·13	0 49.5
5	11 49 24.60	11·294	2 32 15.0	76·35	0 50.1
6	11 53 55.53	11·284	2 1 40.1	76·54	0 50.7
7	11 58 26.26	11·276	1 31 0.8	76·71	0 51.2
8	12 2 56.83	11·271	1 0 17.8	76·85	0 51.8
9	12 7 27.27	11·266	+ 0 29 32.0	76·95	0 52.3
10	12 11 57.61	11·263	− 0 1 15.9	77·02	0 52.8
11	12 16 27.92	11·263	0 32 5.1	77·06	0 53.4
12	12 20 58.23	11·264	1 2 55.0	77·08	0 54.0
13	12 25 28.59	11·266	1 33 44.7	77·06	0 54.6
14	12 29 59.02	11·271	2 4 33.7	77·01	0 55.2
15	12 34 29.58	11·276	2 35 21.2	76·93	0 55.8
16	12 39 0.31	11·285	3 6 6.4	76·82	0 56.4
17	12 43 31.29	11·296	3 36 48.6	76·68	0 56.9
18	12 48 2.54	11·308	4 7 27.1	76·51	0 57.5
19	12 52 34.08	11·321	4 38 1.2	76·31	0 58.0
20	12 57 5.97	11·337	5 8 30.2	76·08	0 58.5
21	13 1 38.27	11·355	5 38 53.2	75·81	0 59.1
22	13 6 11.02	11·375	6 9 9.5	75·53	0 59.8
23	13 10 44.27	11·396	6 39 18.7	75·22	1 0.4
24	13 15 18.04	11·418	7 9 19.9	74·86	1 1.0
25	13 19 52.38	11·443	7 39 12.1	74·46	1 1.6
26	13 24 27.31	11·468	8 8 54.5	74·05	1 2.2
27	13 29 2.89	11·497	8 38 26.5	73·60	1 2.9
28	13 33 39.17	11·526	9 7 47.5	73·12	1 3.6
29	13 38 16.17	11·557	9 36 56.6	72·61	1 4.3
30	13 42 53.91	11·589	10 5 53.0	72·06	1 5.0
31	13 47 32.45	11·623	10 34 35.9	71·49	1 5.7
32	13 52 11.83	11·658	−11 3 4.5	70·87	1 6.4

Day of the Month,	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter	5.1	5.1	5.2	5.2	5.3	5.3
Hor. Parallax	5.1	5.2	5.2	5.3	5.3	5.4

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 47 32.45	11·623	−10 34 35.9	71·49	1 5.7
2	13 52 11.83	11·658	11 3 4.5	70·87	1 6.4
3	13 56 52.08	11·694	11 31 18.1	70·24	1 7.2
4	14 1 33.21	11·731	11 59 16.0	69·56	1 7.9
5	14 6 15.27	11·772	12 26 57.2	68·85	1 8.7
6	14 10 58.28	11·812	12 54 20.8	68·10	1 9.4
7	14 15 42.27	11·853	13 21 26.2	67·33	1 10.2
8	14 20 27.26	11·896	13 48 12.7	66·52	1 11.0
9	14 25 13.28	11·939	14 14 39.5	65·68	1 11.8
10	14 30 0.35	11·983	14 40 45.7	64·81	1 12.6
11	14 34 48.51	12·029	15 6 30.6	63·90	1 13.5
12	14 39 37.77	12·076	15 31 53.3	62·96	1 14.4
13	14 44 28.16	12·123	15 56 53.1	61·99	1 15.3
14	14 49 19.68	12·171	16 21 29.1	60·99	1 16.2
15	14 54 12.37	12·220	16 45 40.8	59·96	1 17.1
16	14 59 6.26	12·270	17 9 27.3	58·89	1 18.1
17	15 4 1.36	12·320	17 32 47.7	57·78	1 19.1
18	15 8 57.65	12·370	17 55 41.0	56·64	1 20.1
19	15 13 55.15	12·421	18 18 6.6	55·48	1 21.1
20	15 18 53.88	12·473	18 40 4.0	54·28	1 22.1
21	15 23 53.87	12·526	19 1 32.4	53·06	1 23.2
22	15 28 55.13	12·578	19 22 31.0	51·80	1 24.3
23	15 33 57.62	12·629	19 42 58.9	50·49	1 25.4
24	15 39 1.32	12·679	20 2 55.1	49·16	1 26.5
25	15 44 6.23	12·731	20 22 19.0	47·81	1 27.6
26	15 49 12.40	12·783	20 41 10.1	46·42	1 28.8
27	15 54 19.82	12·834	20 59 27.6	45·01	1 30.0
28	15 59 28.44	12·883	21 17 10.7	43·57	1 31.2
29	16 4 38.23	12·932	21 34 18.9	42·10	1 32.4
30	16 9 49.18	12·979	21 50 51.5	40·60	1 33.6
31	16 15 1.26	13·026	22 6 47.6	39·06	1 34.9
32	16 20 14.43	13·070	−22 22 6.4	37·49	1 36.2

Day of the Month,	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter	5.4	5.5	5.6	5.6	5.7	5.8
Hor. Parallax	5.5	5.5	5.6	5.7	5.8	5.9

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	16 20 14.43	13·070	−22 22 6.4	37·49	1 36.2
2	16 25 28.66	13·114	22 36 47.5	35·91	1 37.5
3	16 30 43.93	13·157	22 50 50.1	34·30	1 38.8
4	16 36 0.21	13·198	23 4 13.8	32·67	1 40.1
5	16 41 17.46	13·237	23 16 58.1	31·01	1 41.4
6	16 46 35.63	13·275	23 29 2.3	29·33	1 42.8
7	16 51 54.67	13·310	23 40 25.8	27·62	1 44.2
8	16 57 14.52	13·343	23 51 8.2	25·90	1 45.6
9	17 2 35.15	13·374	24 1 8.9	24·15	1 47.0
10	17 7 56.49	13·403	24 10 27.6	22·39	1 48.4
11	17 13 18.51	13·430	24 19 3.8	20·61	1 49.8
12	17 18 41.15	13·454	24 26 57.1	18·82	1 51.2
13	17 24 4.34	13·476	24 34 7.1	17·01	1 52.7
14	17 29 28.02	13·495	24 40 33.4	15·18	1 54.2
15	17 34 52.13	13·512	24 46 15.8	13·34	1 55.6
16	17 40 16.62	13·527	24 51 14.0	11·50	1 57.1
17	17 45 41.43	13·539	24 55 27.7	9·64	1 58.6
18	17 51 6.50	13·548	24 58 56.7	7·77	2 0.1
19	17 56 31.77	13·555	25 1 40.9	5·90	2 1.6
20	18 1 57.15	13·558	25 3 40.1	4·03	2 3.1
21	18 7 22.58	13·559	25 4 54.2	2·14	2 4.6
22	18 12 48.00	13·557	25 5 23.1	−0·26	2 6.1
23	18 18 13.33	13·552	25 5 6.8	+1·62	2 7.6
24	18 23 38.52	13·545	25 4 5.2	3·50	2 9.1
25	18 29 3.50	13·534	25 2 18.5	5·38	2 10.5
26	18 34 28.17	13·520	24 59 46.7	7·26	2 11.9
27	18 39 52.47	13·503	24 56 30.0	9·13	2 13.3
28	18 45 16.34	13·483	24 52 28.4	10·99	2 14.7
29	18 50 39.69	13·461	24 47 42.3	12·85	2 16.1
30	18 56 2.48	13·436	24 42 11.7	14·69	2 17.6
31	19 1 24.64	13·406	24 35 57.0	16·53	2 19.1
32	19 6 46.09	13·376	−24 28 58.3	18·35	2 20.5

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 1 24.64	13·406	−24 35 57.0	16·53	2 19.1
2	19 6 46.09	13·376	24 28 58.3	18·35	2 20.5
3	19 12 6.73	13·341	24 21 16.0	20·16	2 21.9
4	19 17 26.50	13·305	24 12 50.4	21·96	2 23.3
5	19 22 45.37	13·266	24 3 41.8	23·74	2 24.7
6	19 28 3.30	13·225	23 53 51.0	25·49	2 26.1
7	19 33 20.20	13·181	23 43 18.4	27·22	2 27.4
8	19 38 36.02	13·135	23 32 4.2	28·94	2 28.7
9	19 43 50.71	13·087	23 20 9.0	30·64	2 30.0
10	19 49 4.22	13·037	23 7 33.3	32·32	2 31.3
11	19 54 16.51	12·985	22 54 17.7	33·97	2 32.6
12	19 59 27.52	12·931	22 40 22.6	35·60	2 33.8
13	20 4 37.23	12·876	22 25 48.7	37·21	2 35.0
14	20 9 45.61	12·820	22 10 36.7	38·78	2 36.2
15	20 14 52.61	12·762	21 54 47.2	40·33	2 37.4
16	20 19 58.22	12·703	21 38 20.7	41·86	2 38.6
17	20 25 2.40	12·643	21 21 17.9	43·36	2 39.7
18	20 30 5.12	12·582	21 3 39.5	44·83	2 40.9
19	20 35 6.36	12·520	20 45 26.1	46·27	2 42.0
20	20 40 6.11	12·457	20 26 38.5	47·68	2 43.0
21	20 45 4.34	12·394	20 7 17.4	49·07	2 44.0
22	20 50 1.06	12·331	19 47 23.3	50·42	2 44.9
23	20 54 56.24	12·267	19 26 57.1	51·74	2 45.8
24	20 59 40.89	12·203	19 5 59.7	53·02	2 46.8
25	21 4 41.99	12·138	18 44 31.8	54·28	2 47.8
26	21 9 32.53	12·073	18 22 34.1	55·51	2 48.7
27	21 14 21.50	12·007	18 0 7.4	56·70	2 49.6
28	21 19 8.91	11·942	17 37 12.5	57·85	2 50.4
29	21 23 54.74	11·877	17 13 50.2	58·98	2 51.2
30	21 28 39.01	11·811	16 50 1.4	60·07	2 52.0
31	21 33 21.70	11·746	16 25 46.8	61·13	2 52.8
32	21 38 2.83	11·681	−16 1 7.1	62·16	2 53.6

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
	″	″	″	″	″	″
Semidiameter	5.9	6.0	6.1	6.2	6.4	6.5
Hor. Parallax	6.0	6.1	6.2	6.3	6.4	6.6

Day of Month,	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiam.	6.6	6.8	7.0	7.1	7.3	7.5	7.7
Hor. Par.	6.7	6.8	7.0	7.2	7.4	7.6	7.8

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	16 37 26.80	7·572	−22 11 18.8	16·58	21 55.0
2	16 40 28.76	7·590	22 17 50.7	16·07	21 54.1
3	16 43 31.16	7·609	22 24 10.5	15·56	21 53.2
4	16 46 33.99	7·627	22 30 17.9	15·04	21 52.3
5	16 49 37.25	7·644	22 36 12.8	14·52	21 51.4
6	16 52 40.92	7·661	22 41 55.3	14·00	21 50.5
7	16 55 45.00	7·678	22 47 25.2	13·47	21 49.7
8	16 58 49.47	7·694	22 52 42.3	12·94	21 48.8
9	17 1 54.34	7·710	22 57 46.5	12·40	21 47.9
10	17 4 59.59	7·726	23 2 37.9	11·86	21 47.0
11	17 8 5.21	7·741	23 7 16.3	11·32	21 46.2
12	17 11 11.18	7·756	23 11 41.5	10·77	21 45.4
13	17 14 17.50	7·770	23 15 53.4	10·21	21 44.6
14	17 17 24.14	7·784	23 19 52.1	9·66	21 43.7
15	17 20 31.10	7·797	23 23 37.4	9·10	21 42.9
16	17 23 38.38	7·810	23 27 9.2	8·54	21 42.1
17	17 26 45.97	7·823	23 30 27.4	7·97	21 41.3
18	17 29 53.87	7·835	23 33 32.0	7·40	21 40.5
19	17 33 2.06	7·847	23 36 22.8	6·82	21 39.7
20	17 36 10.52	7·858	23 38 59.9	6·24	21 38.9
21	17 39 19.25	7·869	23 41 23.1	5·66	21 38.1
22	17 42 28.25	7·880	23 43 32.5	5·08	21 37.3
23	17 45 37.50	7·890	23 45 27.8	4·50	21 36.5
24	17 48 46.99	7·900	23 47 9.1	3·92	21 35.7
25	17 51 56.72	7·909	23 48 36.3	3·33	21 35.0
26	17 55 6.67	7·918	23 49 49.4	2·74	21 34.2
27	17 58 16.82	7·927	23 50 48.4	2·15	21 33.5
28	18 1 27.18	7·935	23 51 33.1	1·56	21 32.7
29	18 4 37.74	7·943	23 52 3.3	0·96	21 32.0
30	18 7 48.48	7·950	23 52 19.2	0·36	21 31.2
31	18 10 59.38	7·956	23 52 20.7	0·24	21 30.5
32	18 14 10.42	7·962	−23 52 7.8	0·84	21 29.7

Day of the Month,	1st.	9th.	17th.	25th.
	″	″	″	″
Polar Semidiameter	2.2	2.3	2.3	2.3
Horizontal Parallax	3.7	3.8	3.9	3.9

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	18 14 10.42	7·962	−23 52 7.8	0·84	21 29.7
2	18 17 21.61	7·967	23 51 40.7	1·44	21 29.0
3	18 20 32.92	7·972	23 50 59.1	2·04	21 28.2
4	18 23 44.33	7·976	23 50 3.2	2·64	21 27.5
5	18 26 55.83	7·980	23 48 52.8	3·25	21 26.7
6	18 30 7.41	7·983	23 47 27.9	3·85	21 26.0
7	18 33 19.06	7·985	23 45 48.5	4·45	21 25.2
8	18 36 30.76	7·987	23 43 54.7	5·05	21 24.5
9	18 39 42.48	7·988	23 41 46.5	5·65	21 23.7
10	18 42 54.22	7·989	23 39 23.8	6·25	21 23.0
11	18 46 5.96	7·989	23 36 46.6	6·85	21 22.2
12	18 49 17.70	7·988	23 33 55.1	7·45	21 21.5
13	18 52 29.43	7·987	23 30 49.3	8·05	21 20.7
14	18 55 41.12	7·986	23 27 29.0	8·65	21 20.0
15	18 58 52.77	7·984	23 23 54.3	9·25	21 19.3
16	19 2 4.37	7·982	23 20 5.3	9·85	21 18.5
17	19 5 15.92	7·979	23 16 2.0	10·44	21 17.8
18	19 8 27.39	7·976	23 11 44.4	11·03	21 17.0
19	19 11 38.78	7·972	23 7 12.7	11·62	21 16.3
20	19 14 50.07	7·968	23 2 26.9	12·21	21 15.5
21	19 18 1.26	7·964	22 57 26.9	12·80	21 14.8
22	19 21 12.34	7·959	22 52 12.7	13·39	21 14.0
23	19 24 23.31	7·954	22 46 44.5	13·97	21 13.3
24	19 27 34.15	7·948	22 41 2.3	14·56	21 12.5
25	19 30 44.84	7·942	22 35 6.3	15·13	21 11.7
26	19 33 55.38	7·935	22 28 56.5	15·70	21 10.9
27	19 37 5.77	7·928	22 22 33.0	16·27	21 10.2
28	19 40 16.00	7·921	22 15 55.7	16·84	21 9.4
29	19 43 26.04	7·913	22 9 4.8	17·41	21 8.6
30	19 46 35.90	7·905	22 2 0.3	17·97	21 7.8
31	19 49 45.55	7·897	21 54 42.4	18·53	21 7.0
32	19 52 55.00	7·888	−21 47 11.2	19·08	21 6.2

Day of the Month,	2d.	10th.	18th.	26th.
	″	″	″	″
Polar Semidiameter	2.4	2.4	2.5	2.6
Horizontal Parallax	4.0	4.1	4.2	4.3

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	19 46 35.90	7·905	−22 2 0.3	17·97	21 7.8	1	21 22 21.73	7·509	−16 41 11.8	32·91	20 41.2
2	19 49 45.55	7·897	21 54 42.4	18·53	21 7.0	2	21 25 21.79	7·494	16 27 57.4	33·30	20 40.2
3	19 52 55.00	7·888	21 47 11.2	19·08	21 6.2	3	21 28 21.47	7·478	16 14 33.6	33·68	20 39.3
4	19 56 4.23	7·878	21 39 26.7	19·63	21 5.4	4	21 31 20.77	7·462	16 1 0.9	34·05	20 38.3
5	19 59 13.21	7·868	21 31 29.1	20·17	21 4.6	5	21 34 19.71	7·446	15 47 19.4	34·41	20 37.4
6	20 2 21.94	7·858	21 23 18.6	20·71	21 3.8	6	21 37 18.28	7·432	15 33 29.3	34·77	20 36.4
7	20 5 30.43	7·847	21 14 55.3	21·24	21 3.0	7	21 40 16.47	7·415	15 19 30.8	35·12	20 35.4
8	20 8 38.66	7·836	21 6 19.1	21·77	21 2.2	8	21 43 14.29	7·400	15 5 24.0	35·46	20 34.4
9	20 11 46.60	7·824	20 57 30.2	22·30	21 1.4	9	21 46 11.74	7·384	14 51 9.0	35·79	20 33.4
10	20 14 54.25	7·812	20 48 28.7	22·82	21 0.6	10	21 49 8.81	7·369	14 36 46.2	36·12	20 32.4
11	20 18 1.62	7·800	20 39 14.8	23·34	20 59.8	11	21 52 5.51	7·354	14 22 15.7	36·44	20 31.4
12	20 21 8.69	7·788	20 29 48.5	23·85	20 59.0	12	21 55 1.83	7·339	14 7 37.5	36·75	20 30.4
13	20 24 15.46	7·775	20 20 10.0	24·36	20 58.1	13	21 57 57.79	7·324	13 52 51.8	37·06	20 29.4
14	20 27 21.92	7·762	20 10 19.5	24·86	20 57.3	14	22 0 53.39	7·309	13 37 58.8	37·36	20 28.4
15	20 30 28.06	7·749	20 0 17.0	25·36	20 56.4	15	22 3 48.63	7·294	13 22 58.5	37·65	20 27.4
16	20 33 33.88	7·736	19 50 2.6	25·85	20 55.6	16	22 6 43.51	7·280	13 7 51.5	37·94	20 26.3
17	20 36 39.38	7·722	19 39 36.4	26·34	20 54.7	17	22 9 38.03	7·265	12 52 37.9	36·22	20 25.3
18	20 39 44.56	7·709	19 28 58.7	26·81	20 53.9	18	22 12 32.20	7·251	12 37 17.7	38·49	20 24.2
19	20 42 49.40	7·695	19 18 9.7	27·28	20 53.0	19	22 15 26.03	7·237	12 21 50.9	38·75	20 23.2
20	20 45 53.92	7·681	19 7 9.4	27·75	20 52.1	20	22 18 19.52	7·223	12 6 17.7	39·01	20 22.1
21	20 48 58.11	7·667	18 55 57.9	28·21	20 51.2	21	22 21 12.67	7·209	11 50 38.4	39·26	20 21.1
22	20 52 1.97	7·653	18 44 35.3	28·67	20 50.3	22	22 24 5.51	7·195	11 34 53.2	39·50	20 20.0
23	20 55 5.49	7·639	18 33 1.8	29·13	20 49.4	23	22 26 58.02	7·181	11 19 2.3	39·73	20 19.0
24	20 58 8.66	7·625	18 21 17.4	29·58	20 48.5	24	22 29 50.21	7·168	11 3 5.7	39·96	20 17.9
25	21 1 11.50	7·611	18 9 22.3	30·02	20 47.6	25	22 32 42.08	7·154	10 47 3.8	40·18	20 16.8
26	21 4 14.00	7·597	17 57 16.8	30·45	20 46.7	26	22 35 33.63	7·141	10 30 56.9	40·39	20 15.7
27	21 7 16.16	7·582	17 45 0.9	30·88	20 45.8	27	22 38 24.87	7·127	10 14 45.0	40·59	20 14.6
28	21 10 17.97	7·568	17 32 34.8	31·30	20 44.9	28	22 41 15.80	7·115	9 58 28.2	40·79	20 13.5
29	21 13 19.45	7·553	17 19 58.5	31·71	20 44.0	29	22 44 6.42	7·102	9 42 6.5	40·98	20 12.4
30	21 16 20.57	7·539	17 7 12.4	32·12	20 43.1	30	22 46 56.74	7·089	9 25 40.4	41·16	20 11.3
31	21 19 21.33	7·524	16 54 16.8	32·52	20 42.1	31	22 49 46.74	7·076	9 9 10.2	41·33	20 10.2
32	21 22 21.73	7·509	−16 41 11.8	32·91	20 41.2	32	22 52 36.46	7·064	− 8 52 36.0	41·50	20 9.1

Day of the Month,	5th.	13th.	21st.	29th.	Day of the Month,	6th.	14th.	22d.	30th.
	″	″	″	″		″	″	″	″
Polar Semidiameter	2.6	2.7	2.8	2.9	Polar Semidiameter	2.9	3.0	3.1	3.2
Horizontal Parallax	4.5	4.6	4.7	4.8	Horizontal Parallax	5.0	5.1	5.3	5.4

MARS, 1864.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	22 49 46.74	7·076	− 9 9 10.2	41·33	20 10.2	1	0 15 25.05	6·766	− 0 19 14.4	42·95	19 33.6
2	22 52 36.46	7·064	8 52 36.0	41·50	20 9.1	2	0 18 7.35	6·758	− 0 2 4.4	42·88	19 32.4
3	22 55 25.87	7·051	8 35 58.0	41·66	20 8.0	3	0 20 49.46	6·750	+ 0 15 4.0	42·81	19 31.1
4	22 58 14.98	7·039	8 19 16.3	41·81	20 6.8	4	0 23 31.38	6·742	0 32 10.6	42·73	19 29.9
5	23 1 3.79	7·026	8 2 31.2	41·95	20 5.7	5	0 26 13.12	6·735	0 49 15.1	42·64	19 28.6
6	23 3 52.30	7·014	7 45 42.8	42·08	20 4.6	6	0 28 54.67	6·727	1 6 17.3	42·54	19 27.4
7	23 6 40.50	7·002	7 28 51.3	42·20	20 3.5	7	0 31 36.04	6·719	1 23 17.1	42·44	19 26.1
8	23 9 28.42	6·990	7 11 57.0	42·32	20 2.3	8	0 34 17.22	6·711	1 40 14.3	42·33	19 24.9
9	23 12 16.06	6·978	6 55 0.0	42·43	20 1.2	9	0 36 58.23	6·704	1 57 8.9	42·21	19 23.6
10	23 15 3.41	6·967	6 38 0.4	42·53	20 0.0	10	0 39 39.06	6·697	2 14 0.6	42·09	19 22.4
11	23 17 50.48	6·955	6 20 58.5	42·62	19 58.9	11	0 42 19.72	6·690	2 30 49.4	41·96	19 21.1
12	23 20 37.28	6·944	6 3 54.4	42·71	19 57.7	12	0 45 0.20	6·683	2 47 34.8	41·82	19 19.8
13	23 23 23.81	6·933	5 46 48.2	42·79	19 56.6	13	0 46 40.52	6·676	3 4 16.8	41·68	19 18.5
14	23 26 10.08	6·923	5 29 40.2	42·86	19 55.4	14	0 50 20.69	6·669	3 20 55.3	41·53	19 17.3
15	23 28 56.09	6·912	5 12 30.5	42·93	19 54.2	15	0 53 0.71	6·663	3 37 30.3	41·38	19 16.0
16	23 31 41.86	6·902	4 55 19.2	42·99	19 53.0	16	0 55 40.57	6·657	3 54 1.7	41·22	19 14.7
17	23 34 27.39	6·892	4 38 6.6	43·04	19 51.8	17	0 58 20.30	6·651	4 10 29.2	41·06	19 13.4
18	23 37 12.68	6·883	4 20 52.9	43·09	19 50.6	18	1 0 59.88	6·645	4 26 52.6	40·89	19 12.1
19	23 39 57.75	6·873	4 3 38.2	43·13	19 49.4	19	1 3 39.32	6·639	4 43 11.9	40·71	19 10.8
20	23 42 42.60	6·864	3 46 22.6	43·16	19 48.2	20	1 6 18.61	6·633	4 59 26.9	40·52	19 9.5
21	23 45 27.23	6·855	3 29 6.4	43·18	19 47.0	21	1 8 57.77	6·628	5 15 37.6	40·34	19 8.2
22	23 48 11.65	6·846	3 11 49.6	43·20	19 45.8	22	1 11 36.78	6·622	5 31 43.5	40·14	19 6.9
23	23 50 55.86	6·837	2 54 32.4	43·21	19 44.6	23	1 14 15.66	6·616	5 47 44.6	39·94	19 5.6
24	23 53 39.88	6·829	2 37 15.0	43·21	19 43.4	24	1 16 54.39	6·610	6 3 40.7	39·73	19 4.3
25	23 56 23.70	6·821	2 19 57.8	43·20	19 42.2	25	1 19 32.98	6·604	6 19 31.7	39·52	19 3.0
26	23 59 7.32	6·813	2 2 41.0	43·19	19 41.0	26	1 22 11.42	6·598	6 35 17.6	39·30	19 1.7
27	0 1 50.75	6·805	1 45 24.6	43·17	19 39.8	27	1 24 49.71	6·591	6 50 58.2	39·07	19 0.4
28	0 4 33.99	6·797	1 28 8.6	43·14	19 38.5	28	1 27 27.84	6·585	7 6 33.2	38·83	18 59.1
29	0 7 17.04	6·789	1 10 53.4	43·10	19 37.3	29	1 30 5.80	6·578	7 22 2.5	38·59	18 57.8
30	0 9 59.89	6·781	0 53 39.1	43·06	19 36.1	30	1 32 43.59	6·571	7 37 26.0	38·34	18 56.5
31	0 12 42.56	6·773	0 36 26.1	43·01	19 34.9	31	1 35 21.21	6·563	7 52 43.5	38·09	18 55.2
32	0 15 25.05	6·766	− 0 19 14.4	42·95	19 33.6	32	1 37 58.64	6·555	+ 8 7 54.7	37·83	18 53.9

Day of the Month,	8th.	16th.	24th.	Day of the Month,	1st.	9th.	17th.	25th.
	″	″	″		″	″	″	″
Polar Semidiameter,	3.3	3.4	3.5	Polar Semidiameter	3.6	3.7	3.9	4.0
Horizontal Parallax,	5.6	5.8	5.9	Horizontal Parallax	6.1	6.3	6.5	6.8

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon. h m s	Var. of R.A. for 1 Hour. Noon. s	Apparent Declination. Noon. ° ′ ″	Var. of Dec. for 1 Hour. Noon. ″	Meridian Passage. h m
1	1 35 21.21	6·563	+ 7 52 43.5	38·09	18 55.2
2	1 37 58.64	6·555	8 7 54.7	37·83	18 53.9
3	1 40 35.89	6·548	8 22 59.6	37·56	18 52.5
4	1 43 12.94	6·540	8 37 58.0	37·29	18 51.2
5	1 45 49.79	6·532	8 52 49.9	37·02	18 49.9
6	1 48 26.44	6·523	9 7 35.4	36·74	18 48.6
7	1 51 2.88	6·514	9 22 14.1	36·46	18 47.2
8	1 53 39.11	6·506	9 36 45.9	36·17	18 45.9
9	1 56 15.12	6·496	9 51 10.7	35·88	18 44.5
10	1 58 50.91	6·487	10 5 28.3	35·58	18 43.2
11	2 1 26.48	6·477	10 19 38.9	35·28	18 41.8
12	2 4 1.82	6·468	10 33 42.2	34·98	18 40.5
13	2 6 36.94	6·458	10 47 38.1	34·67	18 39.1
14	2 9 11.82	6·448	11 1 26.6	34·36	18 37.7
15	2 11 46.47	6·438	11 15 7.4	34·04	18 36.3
16	2 14 20.88	6·428	11 28 40.7	33·72	18 35.0
17	2 16 55.04	6·418	11 42 6.3	33·40	18 33.6
18	2 19 28.95	6·407	11 55 24.2	33·08	18 32.2
19	2 22 2.60	6·396	12 8 34.1	32·75	18 30.8
20	2 24 35.99	6·385	12 21 36.1	32·41	18 29.4
21	2 27 9.11	6·373	12 34 30.0	32·07	18 28.0
22	2 29 41.95	6·361	12 47 15.6	31·73	18 26.6
23	2 32 14.49	6·348	12 59 53.1	31·39	18 25.2
24	2 34 46.70	6·334	13 12 22.3	30·04	18 23.8
25	2 37 18.58	6·320	13 24 43.2	30·69	18 22.4
26	2 39 50.14	6·306	13 36 55.5	30·33	18 21.0
27	2 42 21.33	6·291	13 48 59.1	29·97	18 19.5
28	2 44 52.14	6·275	14 0 54.1	29·61	18 18.1
29	2 47 22.57	6·258	14 12 40.5	29·25	18 16.7
30	2 49 52.59	6·240	14 24 18.3	28·88	18 15.3
31	2 52 22.19	6·222	14 35 47.2	28·51	18 13.8
32	2 54 51.34	6·203	+14 47 7.1	28·14	18 12.4

Day of the Month,	3d.	11th.	19th.	27th.
	″	″	″	″
Polar Semidiameter	4.1	4.3	4.4	4.6
Horizontal Parallax	7.0	7.2	7.5	7.8

AUGUST.

Day of Month.	Apparent Right Ascension. Noon. h m s	Var. of R.A. for 1 Hour. Noon. s	Apparent Declination. Noon. ° ′ ″	Var. of Dec. for 1 Hour. Noon. ″	Meridian Passage. h m
1	2 54 51.34	6·203	+14 47 7.1	28·14	18 12.4
2	2 57 20.04	6·184	14 58 18.1	27·77	18 10.9
3	2 59 48.26	6·164	15 9 20.0	27·40	18 9.4
4	3 2 15.98	6·144	15 20 13.0	27·02	18 7.9
5	3 4 43.19	6·122	15 30 57.0	26·65	18 6.4
6	3 7 9.87	6·100	15 41 31.9	26·27	18 4.9
7	3 9 36.01	6·077	15 51 57.8	25·89	18 3.4
8	3 12 1.59	6·053	16 2 14.6	25·51	18 1.8
9	3 14 26.60	6·029	16 12 22.4	25·13	18 0.3
10	3 16 51.02	6·004	16 22 21.0	24·75	17 58.7
11	3 19 14.83	5·979	16 32 10.4	24·37	17 57.2
12	3 21 38.02	5·953	16 41 50.8	23·99	17 55.6
13	3 24 0.58	5·926	16 51 22.2	23·61	17 54.1
14	3 26 22.50	5·899	17 0 44.6	23·23	17 52.5
15	3 28 43.75	5·870	17 9 58.0	22·85	17 50.9
16	3 31 4.32	5·841	17 19 2.2	22·47	17 49.3
17	3 33 24.17	5·811	17 27 57.5	22·10	17 47.7
18	3 35 43.28	5·780	17 36 43.7	21·73	17 46.1
19	3 38 1.64	5·748	17 45 20.9	21·36	17 44.5
20	3 40 19.22	5·715	17 53 49.1	20·99	17 42.8
21	3 42 35.98	5·680	18 2 8.5	20·62	17 41.1
22	3 44 51.91	5·645	18 10 19.1	20·25	17 39.4
23	3 47 6.97	5·608	18 18 20.8	19·88	17 37.7
24	3 49 21.13	5·570	18 26 13.7	19·52	17 36.0
25	3 51 34.37	5·530	18 33 57.9	19·16	17 34.3
26	3 53 46.64	5·490	18 41 33.4	18·80	17 32.5
27	3 55 57.90	5·447	18 49 0.2	18·44	17 30.8
28	3 58 8.12	5·403	18 56 18.4	18·08	17 29.0
29	4 0 17.28	5·357	19 3 28.0	17·73	17 27.2
30	4 2 25.33	5·310	19 10 29.2	17·38	17 25.4
31	4 4 32.24	5·264	19 17 22.1	17·03	17 23.6
32	4 6 37.98	5·213	+19 24 6.8	16·69	17 21.7

Day of the Month,	4th.	12th.	20th.	28th.
	″	″	″	″
Polar Semidiameter	4.8	5.0	5.2	5.5
Horizontal Parallax	8.1	8.5	8.9	9.3

GREENWICH MEAN TIME.

	SEPTEMBER.					OCTOBER.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	4 6 37.98	5.218	+19 24 6.8	16.69	17 21.7	1	4 57 20.49	2.945	+21 52 11.1	8.90	16 13.6
2	4 8 42.51	5.162	19 30 43.2	16.35	17 19.8	2	4 58 29.90	2.836	21 55 43.1	8.74	16 10.8
3	4 10 45.80	5.109	19 37 11.4	16.01	17 17.9	3	4 59 36.68	2.725	21 59 11.1	8.59	16 7.9
4	4 12 47.80	5.055	19 43 31.6	15.68	17 16.0	4	5 0 40.75	2.611	22 2 35.5	8.45	16 5.0
5	4 14 48.49	5.000	19 49 43.8	15.35	17 14.1	5	5 1 42.05	2.496	22 5 56.5	8.31	16 2.0
6	4 16 47.84	4.944	19 55 48.4	15.03	17 12.1	6	5 2 40.55	2.378	22 9 14.3	8.18	15 59.1
7	4 18 45.82	4.886	20 1 45.2	14.71	17 10.1	7	5 3 36.20	2.258	22 12 29.1	8.05	15 56.1
8	4 20 42.39	4.827	20 7 34.6	14.40	17 8.0	8	5 4 28.93	2.135	22 15 40.8	7.93	15 53.0
9	4 22 37.52	4.766	20 13 16.5	14.09	17 6.1	9	5 5 18.70	2.010	22 16 49.6	7.81	15 49.8
10	4 24 31.19	4.704	20 18 51.2	13.79	17 4.0	10	5 6 5.44	1.883	22 21 55.6	7.70	15 46.6
11	4 26 23.36	4.641	20 24 18.7	13.50	17 1.9	11	5 6 49.11	1.754	22 24 58.9	7.59	15 43.4
12	4 28 13.97	4.576	20 29 39.2	13.21	16 59.8	12	5 7 29.66	1.622	22 27 59.7	7.49	15 40.1
13	4 30 3.00	4.509	20 34 52.7	12.93	16 57.7	13	5 8 7.04	1.488	22 30 58.1	7.39	15 36.7
14	4 31 50.43	4.440	20 39 59.7	12.65	16 55.5	14	5 8 41.19	1.352	22 33 54.3	7.30	15 33.3
15	4 33 36.18	4.370	20 44 59.9	12.38	16 53.3	15	5 9 12.05	1.214	22 36 48.5	7.21	15 29.9
16	4 35 20.21	4.298	20 49 53.7	12.11	16 51.1	16	5 9 39.55	1.078	22 39 40.5	7.12	15 26.4
17	4 37 2.50	4.223	20 54 41.0	11.85	16 48.9	17	5 10 3.62	0.930	22 42 30.4	7.03	15 22.8
18	4 38 42.99	4.146	20 59 22.3	11.60	16 46.6	18	5 10 24.21	0.784	22 45 18.1	6.94	15 19.2
19	4 40 21.63	4.068	21 3 57.8	11.35	16 44.2	19	5 10 41.28	0.636	22 48 3.8	6.86	15 15.5
20	4 41 58.37	3.988	21 8 27.3	11.11	16 41.9	20	5 10 54.76	0.486	22 50 47.5	6.78	15 11.7
21	4 43 33.17	3.906	21 12 51.1	10.88	16 39.5	21	5 11 4.60	0.332	22 53 29.2	6.70	15 7.9
22	4 45 5.94	3.821	21 17 9.4	10.65	16 37.1	22	5 11 10.73	0.177	22 56 8.9	6.62	15 4.1
23	4 46 36.64	3.732	21 21 22.3	10.43	16 34.6	23	5 11 13.11	0.020	22 58 46.8	6.53	15 0.2
24	4 48 5.20	3.643	21 25 30.0	10.22	16 32.1	24	5 11 11.71	0.139	23 1 22.6	6.44	14 56.2
25	4 49 31.57	3.551	21 29 32.7	10.01	16 29.6	25	5 11 6.47	0.299	23 3 56.2	6.35	14 52.1
26	4 50 55.68	3.456	21 33 30.4	9.81	16 27.0	26	5 10 57.37	0.461	23 6 27.3	6.25	14 47.9
27	4 52 17.48	3.359	21 37 23.4	9.61	16 24.4	27	5 10 44.39	0.623	23 8 55.9	6.14	14 43.7
28	4 53 36.92	3.259	21 41 11.8	9.42	16 21.8	28	5 10 27.51	0.787	23 11 22.0	6.03	14 39.5
29	4 54 53.95	3.157	21 44 55.7	9.24	16 19.1	29	5 10 6.71	0.950	23 13 45.6	5.92	14 35
30	4 56 8.49	3.052	21 48 35.4	9.07	16 16.3	30	5 9 41.98	1.114	23 16 6.6	5.80	14 30.8
31	4 57 20.49	2.945	21 52 11.1	8.90	16 13.6	31	5 9 13.32	1.276	23 18 24.3	5.67	14 26.3
32	4 58 29.90	2.836	+21 55 43.1	8.74	16 10.8	32	5 8 40.76	1.438	+23 20 38.5	5.53	14 21.8

Day of the Month,	5th.	13th.	21st.	29th.	Day of the Month,	7th.	15th.	23d.	31st.
	″	″	″	″		″	″	″	″
Polar Semidiameter	5.8	6.1	6.5	6.9	Polar Semidiameter	7.3	7.8	8.2	8.7
Horizontal Parallax	9.8	10.4	11.0	11.6	Horizontal Parallax	12.4	13.2	14.0	14.8

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	5 8 40.76	1.436	+23 20 38.5	5.63	14 21.8	1	4 29 6.90	4.185	+23 42 28.9	2.75	11 44.1
2	5 8 4.32	1.598	23 22 49.1	5.38	14 17.2	2	4 27 26.77	4.152	23 41 19.7	3.00	11 38.5
3	5 7 24.03	1.757	23 24 56.2	5.22	14 12.6	3	4 25 47.56	4.109	23 40 4.3	3.24	11 32.9
4	5 6 39.93	1.915	23 26 59.6	5.05	14 7.9	4	4 24 9.49	4.057	23 38 43.5	3.46	11 27.4
5	5 5 52.07	2.071	23 28 58.8	4.86	14 3.2	5	4 22 32.76	3.997	23 37 17.8	3.66	11 21.8
6	5 5 0.51	2.222	23 30 53.5	4.66	13 58.4	6	4 20 57.58	3.929	23 35 47.8	3.83	11 16.3
7	5 4 5.31	2.374	23 32 43.3	4.45	13 53.5	7	4 19 24.16	3.853	23 34 13.8	3.98	11 10.9
8	5 3 6.54	2.521	23 34 28.0	4.23	13 48.6	8	4 17 52.65	3.769	23 32 36.5	4.11	11 5.5
9	5 2 4.30	2.664	23 36 7.1	4.01	13 43.6	9	4 16 23.22	3.678	23 30 56.5	4.21	11 0.1
10	5 0 58.67	2.804	23 37 40.6	3.77	13 38.5	10	4 14 56.06	3.581	23 29 14.4	4.28	10 54.7
11	4 59 49.73	2.940	23 39 8.2	3.51	13 33.4	11	4 13 31.32	3.478	23 27 30.7	4.32	10 49.4
12	4 58 37.59	3.070	23 40 29.6	3.25	13 28.2	12	4 12 9.11	3.369	23 25 46.5	4.34	10 44.1
13	4 57 22.37	3.195	23 41 44.4	2.97	13 23.0	13	4 10 49.57	3.255	23 24 2.0	4.34	10 38.8
14	4 56 4.21	3.316	23 42 52.5	2.69	13 17.8	14	4 9 32.82	3.137	23 22 17.6	4.33	10 33.6
15	4 54 43.23	3.431	23 43 53.8	2.39	13 12.5	15	4 8 18.99	3.014	23 20 33.9	4.28	10 28.5
16	4 53 19.55	3.540	23 44 48.0	2.09	13 7.2	16	4 7 8.16	2.887	23 18 51.6	4.22	10 23.4
17	4 51 53.32	3.642	23 45 34.5	1.77	13 1.8	17	4 6 0.42	2.756	23 17 11.3	4.12	10 18.4
18	4 50 24.73	3.737	23 46 13.3	1.45	12 56.4	18	4 4 55.85	2.622	23 15 33.3	4.01	10 13.5
19	4 48 53.95	3.825	23 46 44.2	1.12	12 50.9	19	4 3 54.52	2.486	23 13 58.2	3.88	10 8.5
20	4 47 21.14	3.905	23 47 7.3	0.78	12 45.4	20	4 2 56.50	2.346	23 12 26.5	3.74	10 3.6
21	4 45 46.48	3.977	23 47 22.3	0.44	12 39.9	21	4 2 1.86	2.205	23 10 58.7	3.57	9 58.8
22	4 44 10.18	4.041	23 47 29.0	0.10	12 34.4	22	4 1 10.65	2.062	23 9 35.2	3.38	9 54.0
23	4 42 32.47	4.096	23 47 27.3	0.24	12 28.8	23	4 0 22.90	1.917	23 8 16.3	3.18	9 49.3
24	4 40 53.57	4.142	23 47 17.4	0.58	12 23.3	24	3 59 38.65	1.770	23 7 2.3	2.97	9 44.7
25	4 39 13.63	4.178	23 46 59.3	0.92	12 17.7	25	3 58 57.92	1.621	23 5 53.8	2.73	9 40.1
26	4 37 33.03	4.204	23 46 33.1	1.25	12 12.1	26	3 58 20.75	1.472	23 4 50.9	2.49	9 35.6
27	4 35 51.86	4.221	23 45 59.0	1.57	12 6.5	27	3 57 47.16	1.324	23 3 54.1	2.23	9 31.1
28	4 34 10.42	4.227	23 45 17.3	1.89	12 0.9	28	3 57 17.16	1.175	23 3 3.7	1.96	9 26.7
29	4 32 28.96	4.228	23 44 28.1	2.19	11 55.3	29	3 56 50.74	1.025	23 2 20.0	1.68	9 22.4
30	4 30 47.71	4.209	23 43 31.9	2.48	11 49.7	30	3 56 27.90	0.876	23 1 42.8	1.40	9 18.1
31	4 29 6.90	4.185	23 42 28.9	2.75	11 44.1	31	3 56 8.65	0.727	23 1 12.5	1.10	9 13.9
32	4 27 26.77	4.152	+23 41 19.7	3.00	11 38.5	32	3 55 52.96	0.579	+23 0 49.4	0.80	9 9.7

Day of the Month,	8th.	16th.	24th.	Day of the Month,	2d.	10th.	18th.	26th.
	″	″	″		″	″	″	″
Polar Semidiameter,	9.1	9.4	9.5	Polar Semidiameter	9.3	9.0	8.5	7.9
Horizontal Parallax,	15.5	15.9	16.1	Horizontal Parallax	15.9	15.3	14.5	13.5

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	15 13 17.48	1·781	−16 55 54.7	6·83	20 28.9
2	15 14 0.06	1·767	16 58 37.7	6·75	20 25.6
3	15 14 42.30	1·753	17 1 18.6	6·66	20 22.4
4	15 15 24.19	1·738	17 3 57.3	6·57	20 19.2
5	15 16 5.73	1·723	17 6 33.9	6·48	20 15.9
6	15 16 46.90	1·708	17 9 8.4	6·39	20 12.7
7	15 17 27.69	1·692	17 11 40.7	6·30	20 9.5
8	15 18 8.10	1·676	17 14 10.8	6·21	20 6.2
9	15 18 48.12	1·659	17 16 38.7	6·12	20 2.9
10	15 19 27.73	1·642	17 19 4.4	6·03	19 59.6
11	15 20 6.93	1·625	17 21 27.9	5·93	19 56.3
12	15 20 45.73	1·608	17 23 49.2	5·84	19 53.0
13	15 21 24.11	1·590	17 26 8.3	5·75	19 49.7
14	15 22 2.05	1·572	17 28 25.1	5·65	19 46.4
15	15 22 39.55	1·553	17 30 39.6	5·56	19 43.1
16	15 23 16.61	1·534	17 32 51.9	5·46	19 39.7
17	15 23 53.22	1·515	17 35 1.9	5·37	19 36.4
18	15 24 29.37	1·496	17 37 9.6	5·27	19 33.1
19	15 25 5.05	1·477	17 39 15.0	5·18	19 29.8
20	15 25 40.26	1·457	17 41 18.1	5·08	19 26.4
21	15 26 15.00	1·437	17 43 18.9	4·99	19 23.1
22	15 26 49.24	1·417	17 45 17.4	4·89	19 19.7
23	15 27 22.99	1·396	17 47 13.6	4·79	19 16.3
24	15 27 56.24	1·375	17 49 7.5	4·70	19 12.9
25	15 28 28.99	1·354	17 50 59.0	4·60	19 9.5
26	15 29 1.22	1·332	17 52 48.2	4·50	19 6.1
27	15 29 32.93	1·310	17 54 35.1	4·40	19 2.7
28	15 30 4.11	1·288	17 56 19.6	4·30	18 59.3
29	15 30 34.75	1·265	17 58 1.7	4·20	18 55.9
30	15 31 4.84	1·242	17 59 41.4	4·11	18 52.4
31	15 31 34.37	1·219	18 1 18.8	4·01	18 49.0
32	15 32 3.34	1·195	−18 2 53.8	3·91	18 45.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	15.5	15.9	16.3	16.7
Horizontal Parallax	1.4	1.5	1.5	1.5

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	15 32 3.34	1·195	−18 2 53.8	3·91	18 45.5
2	15 32 31.74	1·171	18 4 26.3	3·81	18 42.1
3	15 32 59.56	1·147	18 5 56.5	3·71	18 38.6
4	15 33 26.79	1·122	18 7 24.3	3·61	18 35.1
5	15 33 53.41	1·097	18 8 49.6	3·50	18 31.6
6	15 34 19.43	1·071	18 10 12.5	3·40	18 28.1
7	15 34 44.83	1·045	18 11 33.0	3·30	18 24.5
8	15 35 9.61	1·019	18 12 51.0	3·20	18 21.0
9	15 35 33.77	0·993	18 14 6.6	3·10	18 17.5
10	15 35 57.29	0·967	18 15 19.7	3·00	18 14.0
11	15 36 20.17	0·940	18 16 30.4	2·89	18 10.4
12	15 36 42.41	0·913	18 17 38.6	2·79	18 6.8
13	15 37 3.99	0·886	18 18 44.4	2·69	18 3.2
14	15 37 24.91	0·858	18 19 47.7	2·59	17 59.6
15	15 37 45.16	0·830	18 20 48.6	2·49	17 56.0
16	15 38 4.74	0·802	18 21 47.0	2·39	17 52.4
17	15 38 23.65	0·774	18 22 42.9	2·28	17 48.8
18	15 38 41.87	0·745	18 23 36.3	2·18	17 45.1
19	15 38 59.41	0·716	18 24 27.3	2·07	17 41.5
20	15 39 16.25	0·687	18 25 15.8	1·97	17 37.8
21	15 39 32.40	0·658	18 26 1.8	1·86	17 34.2
22	15 39 47.84	0·629	18 26 45.3	1·76	17 30.5
23	15 40 2.57	0·599	18 27 26.3	1·66	17 26.8
24	15 40 16.59	0·569	18 28 4.9	1·56	17 23.1
25	15 40 29.89	0·539	18 28 41.0	1·45	17 19.4
26	15 40 42.47	0·509	18 29 14.6	1·35	17 15.6
27	15 40 54.31	0·478	18 29 45.7	1·24	17 11.9
28	15 41 5.42	0·447	18 30 14.3	1·14	17 8.1
29	15 41 15.78	0·416	18 30 40.4	1·03	17 4.3
30	15 41 25.40	0·385	18 31 3.9	0·93	17 0.5
31	15 41 34.27	0·354	18 31 24.9	0·82	16 56.7
32	15 41 42.39	0·322	−18 31 43.4	0·72	16 52.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	16.8	17.3	17.7	18.3
Horizontal Parallax	1.5	1.6	1.6	1.7

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 41 25.40	0·385	−18 31 3.9	0·93	17 0.5
2	15 41 34.27	0·354	18 31 24.9	0·82	16 56.7
3	15 41 42.39	0·322	18 31 43.4	0·72	16 52.9
4	15 41 49.75	0·290	18 31 59.5	0·62	16 49.1
5	15 41 56.33	0·258	18 32 13.1	0·51	16 45.3
6	15 42 2.15	0·226	18 32 24.1	0·41	16 41.4
7	15 42 7.20	0·194	18 32 32.6	0·30	16 37.6
8	15 42 11.48	0·162	18 32 38.7	0·20	16 33.8
9	15 42 14.98	0·130	18 32 42.2	−0·09	16 29.9
10	15 42 17.71	0·098	18 32 43.2	+0·01	16 26.0
11	15 42 19.66	0·065	18 32 41.7	0·12	16 22.1
12	15 42 20.84	0·033	18 32 37.7	0·22	16 18.1
13	15 42 21.25	+0·001	18 32 31.3	0·32	16 14.2
14	15 42 20.88	−0·032	18 32 22.3	0·43	16 10.2
15	15 42 19.73	0·064	18 32 10.8	0·53	16 6.3
16	15 42 17.81	0·096	18 31 56.9	0·63	16 2.3
17	15 42 15.12	0·128	18 31 40.6	0·73	15 58.3
18	15 42 11.66	0·160	18 31 21.8	0·83	15 54.3
19	15 42 7.44	0·192	18 31 0.6	0·94	15 50.3
20	15 42 2.45	0·224	18 30 36.9	1·04	15 46.3
21	15 41 56.70	0·255	18 30 10.8	1·14	15 42.3
22	15 41 50.20	0·287	18 29 42.3	1·24	15 38.2
23	15 41 42.94	0·318	18 29 11.4	1·34	15 34.2
24	15 41 34.92	0·350	18 28 38.0	1·44	15 30.1
25	15 41 26.16	0·381	18 28 2.3	1·54	15 26.0
26	15 41 16.65	0·412	18 27 24.2	1·64	15 21.9
27	15 41 6.39	0·443	18 26 43.8	1·73	15 17.8
28	15 40 55.40	0·473	18 26 1.0	1·83	15 13.7
29	15 40 43.68	0·504	18 25 15.8	1·93	15 9.6
30	15 40 31.23	0·534	18 24 28.3	2·03	15 5.4
31	15 40 18.05	0·564	18 23 38.5	2·12	15 1.2
32	15 40 4.16	0·593	−18 22 46.5	2·21	14 57.1

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	18.3	18.9	19.4	20.0
Horizontal Parallax	1.7	1.7	1.8	1.8

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 40 4.16	0·593	−18 22 46.5	2·21	14 57.1
2	15 39 49.57	0·623	18 21 52.2	2·31	14 52.9
3	15 39 34.27	0·652	18 20 55.6	2·40	14 48.7
4	15 39 18.28	0·680	18 19 56.8	2·50	14 44.5
5	15 39 1.61	0·708	18 18 55.8	2·59	14 40.3
6	15 38 44.27	0·736	18 17 52.6	2·68	14 36.1
7	15 38 26.27	0·763	18 16 47.3	2·76	14 31.8
8	15 38 7.62	0·790	18 15 39.9	2·85	14 27.6
9	15 37 48.34	0·816	18 14 30.4	2·94	14 23.3
10	15 37 28.44	0·842	18 13 18.9	3·02	14 19.0
11	15 37 7.93	0·867	18 12 5.4	3·10	14 14.8
12	15 36 46.82	0·891	18 10 49.9	3·19	14 10.5
13	15 36 25.13	0·915	18 9 32.4	3·27	14 6.2
14	15 36 2.88	0·939	18 8 13.0	3·35	14 1.9
15	15 35 40.07	0·962	18 6 51.8	3·42	13 57.6
16	15 35 16.72	0·984	18 5 28.8	3·50	13 53.3
17	15 34 52.85	1·006	18 4 4.0	3·57	13 48.9
18	15 34 28.48	1·026	18 2 37.5	3·64	13 44.6
19	15 34 3.61	1·046	18 1 9.3	3·71	13 40.2
20	15 33 38.27	1·065	17 59 39.5	3·78	13 35.8
21	15 33 12.47	1·084	17 58 8.1	3·84	13 31.5
22	15 32 46.23	1·102	17 56 35.2	3·90	13 27.1
23	15 32 19.57	1·119	17 55 0.8	3·96	13 22.7
24	15 31 52.50	1·136	17 53 25.0	4·02	13 18.4
25	15 31 25.03	1·152	17 51 47.8	4·08	13 14.0
26	15 30 57.19	1·167	17 50 9.2	4·14	13 9.6
27	15 30 28.99	1·181	17 48 29.3	4·19	13 5.2
28	15 30 0.46	1·195	17 46 48.3	4·23	13 0.8
29	15 29 31.61	1·208	17 45 6.1	4·28	12 56.4
30	15 29 2.46	1·221	17 43 22.8	4·32	12 52.0
31	15 28 33.02	1·232	17 41 38.5	4·36	12 47.5
32	15 28 3.33	1·242	−17 39 53.2	4·40	12 43.1

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	20.0	20.4	20.8	21.1
Horizontal Parallax	1.8	1.9	1.9	1.9

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	15 28 33.02	1.232	−17 41 38.5	4.36	12 47.5
2	15 28 3.33	1.242	17 39 53.2	4.40	12 43.1
3	15 27 33.41	1.251	17 38 7.1	4.44	12 38.7
4	15 27 3.27	1.260	17 36 20.2	4.47	12 34.3
5	15 26 32.93	1.268	17 34 32.5	4.50	12 29.8
6	15 26 2.42	1.274	17 32 44.1	4.53	12 25.4
7	15 25 31.77	1.280	17 30 55.2	4.55	12 20.9
8	15 25 0.99	1.285	17 29 5.8	4.57	12 16.5
9	15 24 30.10	1.289	17 27 16.0	4.58	12 12.0
10	15 23 59.13	1.291	17 25 25.8	4.59	12 7.6
11	15 23 28.11	1.293	17 23 35.4	4.60	12 3.1
12	15 22 57.06	1.294	17 21 44.8	4.61	12 58.7
13	15 22 25.99	1.295	17 19 54.1	4.61	11 54.2
14	15 21 54.92	1.294	17 18 3.3	4.61	11 49.8
15	15 21 23.89	1.292	17 16 12.6	4.60	11 45.3
16	15 20 52.91	1.289	17 14 22.0	4.60	11 40.9
17	15 20 22.01	1.286	17 12 31.6	4.59	11 36.5
18	15 19 51.20	1.282	17 10 41.5	4.58	11 32.0
19	15 19 20.50	1.277	17 8 51.8	4.56	11 27.6
20	15 18 49.93	1.271	17 7 2.5	4.54	11 23.1
21	15 18 19.51	1.264	17 5 13.7	4.52	11 18.7
22	15 17 49.27	1.256	17 3 25.6	4.49	11 14.2
23	15 17 19.21	1.248	17 1 38.2	4.46	11 9.8
24	15 16 49.37	1.239	16 59 51.6	4.43	11 5.4
25	15 16 19.76	1.229	16 58 5.8	4.39	11 1.0
26	15 15 50.40	1.218	16 56 20.0	4.35	10 56.6
27	15 15 21.31	1.206	16 54 37.1	4.30	10 52.2
28	15 14 52.50	1.194	16 52 54.3	4.26	10 47.7
29	15 14 24.01	1.181	16 51 12.7	4.21	10 43.3
30	15 13 55.84	1.167	16 49 32.3	4.15	10 38.9
31	15 13 28.01	1.152	16 47 53.3	4.10	10 34.5
32	15 13 0.54	1.137	−16 46 15.7	4.04	10 30.2

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	21.1	21.2	21.2	21.1
Horizontal Parallax	1.9	2.0	2.0	1.9

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	15 13 0.54	1.137	−16 46 15.7	4.04	10 30.2
2	15 12 33.45	1.120	16 44 39.6	3.97	10 25.8
3	15 12 6.77	1.103	16 43 5.0	3.91	10 21.4
4	15 11 40.51	1.085	16 41 32.0	3.84	10 17.0
5	15 11 14.68	1.067	16 40 0.7	3.77	10 12.7
6	15 10 49.30	1.048	16 38 31.3	3.69	10 8.4
7	15 10 24.39	1.028	16 37 3.7	3.61	10 4.0
8	15 9 59.96	1.007	16 35 38.0	3.53	9 59.7
9	15 9 36.03	0.986	16 34 14.3	3.45	9 55.4
10	15 9 12.62	0.964	16 32 52.7	3.36	9 51.1
11	15 8 49.74	0.942	16 31 33.3	3.27	9 46.8
12	15 8 27.40	0.919	16 30 16.0	3.17	9 42.5
13	15 8 5.60	0.896	16 29 0.9	3.08	9 38.2
14	15 7 44.37	0.872	16 27 48.1	2.98	9 33.9
15	15 7 23.72	0.848	16 26 37.6	2.89	9 29.6
16	15 7 3.65	0.824	16 25 29.5	2.79	9 25.3
17	15 6 44.17	0.799	16 24 23.9	2.69	9 21.1
18	15 6 25.29	0.774	16 23 20.8	2.58	9 16.9
19	15 6 7.03	0.748	16 22 20.2	2.47	9 12.6
20	15 5 49.39	0.722	16 21 22.1	2.36	9 8.4
21	15 5 32.38	0.695	16 20 26.6	2.25	9 4.2
22	15 5 16.01	0.669	16 19 33.9	2.14	9 0.0
23	15 5 0.28	0.642	16 18 43.8	2.03	8 55.8
24	15 4 45.20	0.615	16 17 56.5	1.91	8 51.6
25	15 4 30.78	0.587	16 17 12.0	1.80	8 47.4
26	15 4 17.04	0.559	16 16 30.2	1.68	8 43.3
27	15 4 3.97	0.530	16 15 51.2	1.56	8 39.1
28	15 3 51.58	0.502	16 15 15.1	1.44	8 35.0
29	15 3 39.87	0.474	16 14 41.9	1.32	8 30.9
30	15 3 28.85	0.444	16 14 11.6	1.20	8 26.8
31	15 3 18.54	0.415	16 13 44.2	1.08	8 22.7
32	15 3 8.94	0.385	−16 13 19.7	0.96	8 18.6

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	21.0	20.7	20.3	19.9
Horizontal Parallax	1.9	1.9	1.9	1.8

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	15 3 18.54	0·415	−16 13 44.2	1·08	8 22.7	1	15 3 56.14	0·511	−16 24 28.3	2·76	6 21.6
2	15 3 8.94	0·386	16 13 19.7	0·96	8 18.6	2	15 4 8.74	0·539	16 25 35.8	2·87	6 17.8
3	15 3 0.05	0·356	16 12 58.3	0·83	8 14.5	3	15 4 22.03	0·568	16 26 46.0	2·98	6 14.1
4	15 2 51.87	0·326	16 12 39.9	0·70	8 10.5	4	15 4 36.00	0·596	16 27 58.9	3·09	6 10.4
5	15 2 44.41	0·296	16 12 24.6	0·57	8 6.4	5	15 4 50.65	0·625	16 29 14.4	3·20	6 6.7
6	15 2 37.67	0·266	16 12 12.3	0·45	8 2.4	6	15 5 5.98	0·652	16 30 32.5	3·31	6 3.1
7	15 2 31.64	0·236	16 12 2.9	0·33	7 58.4	7	15 5 21.98	0·680	16 31 53.3	3·42	5 59.4
8	15 2 26.35	0·205	16 11 56.6	0·20	7 54.3	8	15 5 38.64	0·708	16 33 16.6	3·53	5 55.8
9	15 2 21.79	0·175	16 11 53.4	+0·07	7 50.3	9	15 5 55.96	0·735	16 34 42.4	3·63	5 52.1
10	15 2 17.96	0·145	16 11 53.3	−0·06	7 46.3	10	15 6 13.94	0·763	16 36 10.7	3·73	5 48.5
11	15 2 14.85	0·114	16 11 56.2	0·18	7 42.4	11	15 6 32.57	0·790	16 37 41.4	3·83	5 44.9
12	15 2 12.48	0·084	16 12 2.1	0·31	7 38.4	12	15 6 51.85	0·817	16 39 14.5	3·93	5 41.2
13	15 2 10.83	0·053	16 12 11.1	0·44	7 34.5	13	15 7 11.76	0·843	16 40 50.1	4·03	5 37.6
14	15 2 9.92	−0·023	16 12 23.1	0·56	7 30.5	14	15 7 32.30	0·869	16 42 28.0	4·13	5 34.1
15	15 2 9.73	+0·007	16 12 38.2	0·69	7 26.6	15	15 7 53.46	0·896	16 44 8.3	4·22	5 30.5
16	15 2 10.27	0·038	16 12 56.4	0·82	7 22.7	16	15 8 15.24	0·920	16 45 50.8	4·32	5 26.9
17	15 2 11.53	0·068	16 13 17.6	0·95	7 18.8	17	15 8 37.64	0·946	16 47 35.5	4·41	5 23.3
18	15 2 13.52	0·098	16 13 41.6	1·07	7 14.9	18	15 9 0.65	0·971	16 49 22.4	4·50	5 19.8
19	15 2 16.22	0·128	16 14 9.0	1·19	7 11.0	19	15 9 24.26	0·996	16 51 11.5	4·59	5 16.3
20	15 2 19.64	0·157	16 14 39.1	1·32	7 7.1	20	15 9 48.47	1·021	16 53 2.6	4·68	5 12.8
21	15 2 23.78	0·187	16 15 12.2	1·44	7 3.2	21	15 10 13.28	1·046	16 54 55.8	4·77	5 9.3
22	15 2 28.63	0·217	16 15 48.3	1·56	6 59.4	22	15 10 38.69	1·071	16 56 51.1	4·85	5 5.8
23	15 2 34.20	0·247	16 16 27.3	1·68	6 55.5	23	15 11 4.68	1·095	16 58 48.4	4·93	5 2.2
24	15 2 40.48	0·276	16 17 9.3	1·81	6 51.7	24	15 11 31.26	1·119	17 0 47.6	5·01	4 58.8
25	15 2 47.47	0·306	16 17 54.2	1·93	6 47.9	25	15 11 58.41	1·143	17 2 48.7	5·09	4 55.3
26	15 2 55.17	0·335	16 18 42.0	2·05	6 44.1	26	15 12 26.13	1·167	17 4 51.8	5·17	4 51.9
27	15 3 3.57	0·365	16 19 32.6	2·17	6 40.3	27	15 12 54.42	1·191	17 6 56.7	5·24	4 48.3
28	15 3 12.68	0·394	16 20 26.1	2·29	6 36.5	28	15 13 23.28	1·214	17 9 3.4	5·32	4 44.8
29	15 3 22.50	0·424	16 21 22.4	2·41	6 32.8	29	15 13 52.60	1·237	17 11 11.9	5·39	4 41.4
30	15 3 33.02	0·453	16 22 21.6	2·53	6 29.0	30	15 14 22.65	1·260	17 13 22.2	5·46	4 38.0
31	15 3 44.23	0·482	16 23 23.5	2·64	6 25.3	31	15 14 53.16	1·283	17 15 34.1	5·53	4 34.5
32	15 3 56.14	0·511	−16 24 28.3	2·76	6 21.6	32	15 15 24.22	1·306	−17 17 47.7	5·60	4 31.1

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″		″	″	″	″
Polar Semidiameter	19.9	19.3	18.7	18.2	Polar Semidiameter	18.1	17.7	17.2	16.7
Horizontal Parallax	1.8	1.8	1.7	1.7	Horizontal Parallax	1.7	1.6	1.6	1.5

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 15 24.22	1·305	−17 17 47.7	5·60	4 31.1
2	15 15 55.81	1·327	17 20 2.9	5·67	4 27.7
3	15 16 27.93	1·349	17 22 19.7	5·74	4 24.3
4	15 17 0.58	1·371	17 24 38.0	5·80	4 21.0
5	15 17 33.74	1·392	17 26 57.8	5·86	4 17.6
6	15 18 7.42	1·414	17 29 19.1	5·92	4 14.2
7	15 18 41.60	1·435	17 31 41.8	5·98	4 10.8
8	15 19 16.28	1·455	17 34 5.8	6·03	4 7.5
9	15 19 51.46	1·476	17 36 31.1	6·08	4 4.1
10	15 20 27.12	1·496	17 38 57.7	6·13	4 0.8
11	15 21 3.26	1·516	17 41 25.5	6·18	3 57.4
12	15 21 39.88	1·535	17 43 54.5	6·23	3 54.1
13	15 22 16.96	1·555	17 46 24.7	6·28	3 50.8
14	15 22 54.50	1·574	17 48 56.0	6·33	3 47.5
15	15 23 32.50	1·593	17 51 28.4	6·37	3 44.2
16	15 24 10.95	1·611	17 54 1.7	6·41	3 40.9
17	15 24 49.85	1·630	17 56 36.1	6·45	3 37.6
18	15 25 29.19	1·648	17 59 11.4	6·49	3 34.4
19	15 26 8.96	1·666	18 1 47.6	6·53	3 31.1
20	15 26 49.16	1·684	18 4 24.7	6·57	3 27.8
21	15 27 29.79	1·702	18 7 2.6	6·60	3 24.6
22	15 28 10.85	1·720	18 9 41.3	6·63	3 21.3
23	15 28 52.33	1·737	18 12 20.7	6·66	3 18.1
24	15 29 34.22	1·754	18 15 0.9	6·69	3 14.9
25	15 30 16.51	1·771	18 17 41.7	6·71	3 11.6
26	15 30 59.21	1·788	18 20 23.2	6·74	3 8.4
27	15 31 42.31	1·804	18 23 5.3	6·76	3 5.2
28	15 32 25.80	1·820	18 25 48.0	6·79	3 2.0
29	15 33 9.68	1·836	18 28 31.2	6·81	2 58.8
30	15 33 53.94	1·852	18 31 14.8	6·83	2 55.6
31	15 34 38.57	1·867	18 33 58.9	6·85	2 52.4
32	15 35 23.57	1·893	−18 36 43.4	6·87	2 49.2

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	16.6	16.2	15.8	15.5
Horizontal Parallax	1.5	1.5	1.5	1.4

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 34 38.57	1·867	−18 33 58.9	6·85	2 52.4
2	15 35 23.57	1·883	18 36 43.4	6·87	2 49.2
3	15 36 8.94	1·898	18 39 28.3	6·88	2 46.0
4	15 36 54.66	1·912	18 42 13.5	6·89	2 42.8
5	15 37 40.73	1·927	18 44 59.0	6·90	2 39.6
6	15 38 27.14	1·941	18 47 44.7	6·91	2 36.5
7	15 39 13.89	1·955	18 50 30.6	6·92	2 33.4
8	15 40 0.98	1·969	18 53 16.8	6·93	2 30.2
9	15 40 48.40	1·983	18 56 3.2	6·93	2 27.1
10	15 41 36.14	1·996	18 58 49.6	6·94	2 23.9
11	15 42 24.19	2·009	19 1 36.1	6·94	2 20.8
12	15 43 12.55	2·021	19 4 22.6	6·94	2 17.7
13	15 44 1.21	2·034	19 7 9.0	6·93	2 14.5
14	15 44 50.17	2·046	19 9 55.4	6·93	2 11.4
15	15 45 39.42	2·058	19 12 41.8	6·93	2 8.3
16	15 46 28.96	2·070	19 15 28.0	6·92	2 5.2
17	15 47 18.79	2·082	19 18 14.0	6·92	2 2.1
18	15 48 8.90	2·094	19 21 0.0	6·91	1 59.0
19	15 48 59.29	2·105	19 23 45.8	6·90	1 55.9
20	15 49 49.95	2·116	19 26 31.4	6·69	1 52.8
21	15 50 40.87	2·127	19 29 16.7	6·88	1 49.7
22	15 51 32.05	2·138	19 32 1.6	6·86	1 46.6
23	15 52 23.49	2·149	19 34 46.2	6·85	1 43.5
24	15 53 15.18	2·159	19 37 30.5	6·83	1 40.4
25	15 54 7.12	2·169	19 40 14.4	6·82	1 37.4
26	15 54 59.30	2·179	19 42 57.8	6·80	1 34.3
27	15 55 51.72	2·189	19 45 40.8	6·78	1 31.3
28	15 56 44.37	2·198	19 48 23.3	6·76	1 28.2
29	15 57 37.24	2·207	19 51 5.3	6·74	1 25.2
30	15 58 30.33	2·216	19 53 46.8	6·72	1 22.1
31	15 59 23.63	2·225	19 56 27.7	6·70	1 19.1
32	16 0 17.14	2·234	−19 59 8.0	6·67	1 16.0

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	15.5	15.3	15.1	14.9
Horizontal Parallax	1.4	1.4	1.4	1.4

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	16 0 17.14	2·234	−19 59 8.0	6·67	1 16.0	1	16 28 10.00	2·379	−21 12 28.2	5·42	23 42.8
2	16 1 10.85	2·242	20 1 47.7	6·64	1 13.0	2	16 29 7.12	2·380	21 14 37.7	5·37	23 39.8
3	16 2 4.75	2·250	20 4 26.7	6·61	1 9.9	3	16 30 4.27	2·381	21 16 46.0	5·32	23 36.8
4	16 2 58.83	2·257	20 7 4.9	6·58	1 6.9	4	16 31 1.43	2·382	21 18 52.9	5·27	23 33.8
5	16 3 53.10	2·265	20 9 42.5	6·55	1 3.9	5	16 31 58.60	2·382	21 20 58.5	5·21	23 30.9
6	16 4 47.54	2·272	20 12 19.3	6·52	1 0.9	6	16 32 55.77	2·382	21 23 2.7	5·15	23 27.9
7	16 5 42.15	2·279	20 14 55.4	6·49	0 57.8	7	16 33 52.93	2·381	21 25 5.5	5·09	23 24.9
8	16 6 36.92	2·285	20 17 30.6	6·45	0 54.8	8	16 34 50.08	2·381	21 27 6.9	5·03	23 21.9
9	16 7 31.85	2·292	20 20 5.1	6·42	0 51.8	9	16 35 47.22	2·380	21 29 6.9	4·97	23 18.9
10	16 8 26.94	2·298	20 22 38.7	6·38	0 48.8	10	16 36 44.34	2·379	21 31 5.5	4·91	23 16.0
11	16 9 22.17	2·304	20 25 11.4	6·34	0 45.8	11	16 37 41.43	2·378	21 33 2.7	4·85	23 13.0
12	16 10 17.55	2·310	20 27 43.1	6·31	0 42.7	12	16 38 38.50	2·377	21 34 58.6	4·80	23 10.0
13	16 11 13.07	2·316	20 30 14.0	6·27	0 39.7	13	16 39 35.53	2·375	21 36 53.1	4·74	23 7.0
14	16 12 8.72	2·321	20 32 44.0	6·23	0 36.7	14	16 40 32.52	2·373	21 38 46.1	4·68	23 4.0
15	16 13 4.49	2·326	20 35 13.0	6·19	0 33.7	15	16 41 29.46	2·371	21 40 37.7	4·62	23 1.0
16	16 14 0.39	2·331	20 37 41.0	6·15	0 30.7	16	16 42 26.35	2·369	21 42 27.8	4·56	22 58.0
17	16 14 56.41	2·336	20 40 8.0	6·11	0 27.7	17	16 43 23.18	2·367	21 44 16.5	4·50	22 55.0
18	16 15 52.54	2·341	20 42 33.9	6·06	0 24.7	18	16 44 19.95	2·364	21 46 3.7	4·43	22 52.0
19	16 16 48.78	2·345	20 44 58.8	6·01	0 21.7	19	16 45 16.64	2·361	21 47 49.3	4·37	22 49.0
20	16 17 45.12	2·350	20 47 22.6	5·97	0 18.7	20	16 46 13.26	2·358	21 49 33.5	4·31	22 46.1
21	16 18 41.56	2·354	20 49 45.3	5·92	0 15.7	21	16 47 9.80	2·354	21 51 16.2	4·25	22 43.1
22	16 19 38.09	2·357	20 52 6.9	5·88	0 12.7	22	16 48 6.24	2·350	21 52 57.4	4·19	22 40.1
23	16 20 34.71	2·361	20 54 27.4	5·83	0 9.7	23	16 49 2.59	2·346	21 54 37.2	4·13	22 37.1
24	16 21 31.40	2·364	20 56 46.7	5·78	0 6.7	24	16 49 58.84	2·341	21 56 15.5	4·06	22 34.1
25	16 22 28.17	2·367	20 59 4.9	5·73	0 3.7	25	16 50 54.98	2·337	21 57 52.3	4·00	22 31.1
26	16 23 25.01	2·370	21 1 21.8	5·68	0 0.7 23 57.8	26	16 51 51.00	2·332	21 59 27.6	3·94	22 28.1
27	16 24 21.90	2·372	21 3 37.5	5·63	23 54.8	27	16 52 46.91	2·327	22 1 1.3	3·87	22 25.1
28	16 25 18.86	2·374	21 5 52.0	5·58	23 51.8	28	16 53 42.68	2·321	22 2 33.6	3·81	22 22.1
29	16 26 15.86	2·376	21 8 5.3	5·53	23 48.8	29	16 54 38.31	2·315	22 4 4.4	3·75	22 19.0
30	16 27 12.91	2·378	21 10 17.4	5·48	23 45.8	30	16 55 33.79	2·309	22 5 33.7	3·69	22 16.0
31	16 28 10.00	2·379	21 12 28.2	5·42	23 42.8	31	16 56 29.12	2·302	22 7 1.4	3·62	22 13.0
32	16 29 7.12	2·380	−21 14 37.7	5·37	23 39.8	32	16 57 24.29	2·295	−22 8 27.6	3·56	22 10.0

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″		″	″	″	″
Polar Semidiameter	14.9	14.8	14.7	14.7	Polar Semidiameter	14.7	14.8	14.8	15.0
Horizontal Parallax	1.4	1.4	1.4	1.4	Horizontal Parallax	1.4	1.4	1.4	1.4

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 8 10.42	+0·437	− 4 37 32.6	−1·97	18 23.7
2	13 8 20.74	0·422	4 38 18.7	1·87	18 20.0
3	13 8 30.69	0·407	4 39 2.4	1·77	18 16.2
4	13 8 40.27	0·391	4 39 43.7	1·67	18 12.4
5	13 8 49.48	0·376	4 40 22.7	1·57	18 8.6
6	13 8 58.32	0·360	4 40 59.3	1·47	18 4.8
7	13 9 6.78	0·345	4 41 33.5	1·37	18 1.0
8	13 9 14.86	0·329	4 42 5.2	1·27	17 57.2
9	13 9 22.56	0·313	4 42 34.5	1·17	17 53.4
10	13 9 29.87	0·297	4 43 1.4	1·07	17 49.6
11	13 9 36.80	0·281	4 43 25.9	0·97	17 45.8
12	13 9 43.34	0·264	4 43 47.9	0·87	17 41.9
13	13 9 49.49	0·248	4 44 7.5	0·77	17 38.1
14	13 9 55.24	0·231	4 44 24.7	0·66	17 34.2
15	13 10 0.60	0·215	4 44 39.4	0·56	17 30.4
16	13 10 5.57	0·199	4 44 51.7	0·46	17 26.5
17	13 10 10.15	0·183	4 45 1.6	0·36	17 22.7
18	13 10 14.34	0·166	4 45 9.0	0·26	17 18.8
19	13 10 18.13	0·150	4 45 14.0	0·16	17 14.9
20	13 10 21.53	0·133	4 45 16.6	−0·06	17 11.0
21	13 10 24.53	0·117	4 45 16.7	+0·06	17 7.1
22	13 10 27.13	0·100	4 45 14.4	0·15	17 3.2
23	13 10 29.33	0·084	4 45 9.7	0·25	16 59.3
24	13 10 31.14	0·068	4 45 2.5	0·35	16 55.4
25	13 10 32.56	0·051	4 44 52.9	0·45	16 51.5
26	13 10 33.58	0·034	4 44 40.9	0·56	16 47.6
27	13 10 34.20	+0·017	4 44 26.5	0·66	16 43.7
28	13 10 34.41	0·000	4 44 9.7	0·75	16 39.8
29	13 10 34.22	−0·016	4 43 50.5	0·86	16 35.8
30	13 10 33.64	0·033	4 43 28.9	0·96	16 31.9
31	13 10 32.66	0·049	4 43 5.0	1·06	16 27.9
32	13 10 31.28	−0·066	− 4 42 38.7	+1·16	16 23.9

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 10 31.28	−0·066	− 4 42 38.7	+1·16	16 23.9
2	13 10 29.51	0·082	4 42 10.0	1·25	16 20.0
3	13 10 27.34	0·099	4 41 38.9	1·34	16 16.0
4	13 10 24.78	0·115	4 41 5.5	1·44	16 12.0
5	13 10 21.83	0·131	4 40 29.8	1·54	16 8.1
6	13 10 18.48	0·148	4 39 51.8	1·63	16 4.1
7	13 10 14.74	0·164	4 39 11.5	1·73	16 0.1
8	13 10 10.62	0·180	4 38 28.9	1·83	15 56.1
9	13 10 6.11	0·196	4 37 44.1	1·92	15 52.1
10	13 10 1.22	0·212	4 36 57.1	2·02	15 48.1
11	13 9 55.95	0·228	4 36 7.9	2·10	15 44.1
12	13 9 50.30	0·243	4 35 16.5	2·19	15 40.1
13	13 9 44.28	0·259	4 34 22.9	2·28	15 36.0
14	13 9 37.89	0·274	4 33 27.2	2·36	15 32.0
15	13 9 31.13	0·289	4 32 29.4	2·45	15 27.9
16	13 9 24.01	0·304	4 31 29.6	2·53	15 23.8
17	13 9 16.54	0·319	4 30 27.8	2·62	15 19.8
18	13 9 8.72	0·333	4 29 24.0	2·70	15 15.7
19	13 9 0.55	0·348	4 28 18.2	2·78	15 11.6
20	13 8 52.04	0·362	4 27 10.5	2·86	15 7.6
21	13 8 43.18	0·376	4 26 0.9	2·94	15 3.5
22	13 8 33.98	0·390	4 24 49.4	3·02	14 59.4
23	13 8 24.45	0·404	4 23 36.1	3·09	14 55.3
24	13 8 14.60	0·417	4 22 21.0	3·17	14 51.2
25	13 8 4.43	0·430	4 21 4.1	3·24	14 47.1
26	13 7 53.94	0·443	4 19 45.4	3·31	14 43.0
27	13 7 43.14	0·456	4 18 25.0	3·38	14 38.9
28	13 7 32.03	0·469	4 17 3.0	3·45	14 34.8
29	13 7 20.62	0·481	4 15 39.4	3·52	14 30.7
30	13 7 8.92	0·494	4 14 14.2	3·58	14 26.5
31	13 6 56.93	0·506	4 12 47.4	3·65	14 22.4
32	13 6 44.65	−0·517	− 4 11 19.1	+3·71	14 18.3

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.1	8.2	8.3	8.5
Horizontal Parallax	0.9	0.9	0.9	0.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.5	8.7	8.8	8.9
Horizontal Parallax	0.9	0.9	1.0	1.0

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 7 8.92	−0.494	− 4 14 14.2	+3.58	14 26.5
2	13 6 56.93	0.506	4 12 47.4	3.65	14 22.4
3	13 6 44.65	0.517	4 11 19.1	3.71	14 18.3
4	13 6 32.10	0.529	4 9 49.4	3.77	14 14.1
5	13 6 19.28	0.540	4 8 18.3	3.83	14 10.0
6	13 6 6.19	0.551	4 6 45.8	3.88	14 5.8
7	13 5 52.85	0.561	4 5 12.0	3.93	14 1.7
8	13 5 39.26	0.571	4 3 36.9	3.99	13 57.5
9	13 5 25.43	0.581	4 2 0.6	4.04	13 53.3
10	13 5 11.36	0.591	4 0 23.1	4.09	13 49.2
11	13 4 57.07	0.600	3 58 44.5	4.13	13 45.0
12	13 4 42.56	0.609	3 57 4.9	4.17	13 40.8
13	13 4 27.84	0.618	3 55 24.4	4.21	13 36.6
14	13 4 12.92	0.626	3 53 42.9	4.25	13 32.4
15	13 3 57.81	0.633	3 52 0.5	4.28	13 28.3
16	13 3 42.52	0.641	3 50 17.3	4.32	13 24.1
17	13 3 27.06	0.648	3 48 33.3	4.35	13 19.9
18	13 3 11.43	0.654	3 46 48.5	4.38	13 15.7
19	13 2 55.65	0.661	3 45 3.1	4.40	13 11.5
20	13 2 39.72	0.667	3 43 17.1	4.43	13 7.3
21	13 2 23.65	0.673	3 41 30.5	4.46	13 3.1
22	13 2 7.44	0.678	3 39 43.4	4.47	12 58.9
23	13 1 51.10	0.683	3 37 55.9	4.49	12 54.7
24	13 1 34.65	0.688	3 36 8.0	4.50	12 50.5
25	13 1 18.09	0.692	3 34 19.8	4.51	12 46.3
26	13 1 1.44	0.696	3 32 31.3	4.53	12 42.1
27	13 0 44.70	0.699	3 30 42.5	4.54	12 37.9
28	13 0 27.87	0.702	3 28 53.5	4.54	12 33.7
29	13 0 10.97	0.705	3 27 4.4	4.55	12 29.4
30	12 59 54.01	0.708	3 25 15.3	4.55	12 25.2
31	12 59 36.99	0.710	3 23 26.2	4.55	12 21.0
32	12 59 19.93	−0.712	− 3 21 37.1	+4.54	12 16.8

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 59 19.93	−0.712	− 3 21 37.1	+4.54	12 16.8
2	12 59 2.83	0.713	3 19 48.1	4.54	12 12.6
3	12 58 45.71	0.714	3 17 59.3	4.53	12 8.4
4	12 58 28.57	0.714	3 16 10.8	4.51	12 4.2
5	12 58 11.42	0.714	3 14 22.6	4.50	12 0.0
6	12 57 54.28	0.714	3 12 34.7	4.49	11 55.7
7	12 57 37.15	0.713	3 10 47.2	4.47	11 51.5
8	12 57 20.04	0.712	3 9 0.2	4.45	11 47.3
9	12 57 2.96	0.711	3 7 13.8	4.42	11 43.1
10	12 56 45.92	0.709	3 5 28.0	4.39	11 38.9
11	12 56 28.94	0.706	3 3 42.9	4.36	11 34.6
12	12 56 12.02	0.704	3 1 58.5	4.33	11 30.4
13	12 55 55.16	0.701	3 0 14.9	4.30	11 26.2
14	12 55 38.38	0.697	2 58 32.1	4.26	11 22.0
15	12 55 21.60	0.693	2 56 50.2	4.23	11 17.8
16	12 55 5.10	0.689	2 55 9.2	4.19	11 13.6
17	12 54 48.61	0.685	2 53 29.1	4.15	11 9.4
18	12 54 32.24	0.680	2 51 50.1	4.10	11 5.2
19	12 54 15.99	0.674	2 50 12.2	4.06	11 1.0
20	12 53 59.87	0.669	2 48 35.4	4.01	10 56.8
21	12 53 43.88	0.663	2 46 59.8	3.96	10 52.6
22	12 53 28.03	0.657	2 45 25.4	3.91	10 48.4
23	12 53 12.33	0.651	2 43 52.2	3.86	10 44.2
24	12 52 56.79	0.644	2 42 20.3	3.80	10 40.0
25	12 52 41.42	0.637	2 40 49.8	3.74	10 35.8
26	12 52 26.23	0.629	2 39 20.8	3.68	10 31.6
27	12 52 11.22	0.622	2 37 53.2	3.62	10 27.4
28	12 51 56.39	0.614	2 36 27.1	3.56	10 23.3
29	12 51 41.76	0.605	2 35 2.5	3.49	10 19.1
30	12 51 27.33	0.597	2 33 39.5	3.43	10 14.9
31	12 51 13.12	0.588	2 32 18.1	3.36	10 10.8
32	12 50 59.13	−0.578	− 2 30 58.4	+3.29	10 6.6

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.9	9.0	9.0	9.0
Horizontal Parallax	1.0	1.0	1.0	1.0

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	9.0	9.0	9.0	8.9
Horizontal Parallax	1.0	1.0	1.0	1.0

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 51 13.12	−0.588	− 2 32 18.1	+3.36	10 10.8
2	12 50 59.13	0.578	2 30 58.4	3.29	10 6.6
3	12 50 45.36	0.569	2 29 40.4	3.21	10 2.5
4	12 50 31.82	0.559	2 28 24.1	3.14	9 58.3
5	12 50 18.52	0.549	2 27 9.6	3.06	9 54.1
6	12 50 5.47	0.538	2 25 57.0	2.99	9 50.0
7	12 49 52.68	0.528	2 24 46.3	2.91	9 45.8
8	12 49 40.15	0.517	2 23 37.4	2.83	9 41.7
9	12 49 27.88	0.506	2 22 30.4	2.75	9 37.6
10	12 49 15.88	0.494	2 21 25.4	2.67	9 33.4
11	12 49 4.16	0.482	2 20 22.4	2.58	9 29.3
12	12 48 52.73	0.471	2 19 21.5	2.49	9 25.2
13	12 48 41.58	0.459	2 18 22.7	2.41	9 21.1
14	12 48 30.72	0.446	2 17 25.9	2.32	9 17.0
15	12 48 20.16	0.434	2 16 31.2	2.24	9 12.9
16	12 48 9.91	0.421	2 15 38.6	2.15	9 8.8
17	12 47 59.97	0.408	2 14 48.2	2.06	9 4.7
18	12 47 50.33	0.395	2 13 59.9	1.97	9 0.6
19	12 47 41.00	0.382	2 13 13.8	1.88	8 56.5
20	12 47 31.99	0.369	2 12 29.9	1.78	8 52.4
21	12 47 23.30	0.355	2 11 48.2	1.69	8 48.3
22	12 47 14.94	0.341	2 11 8.8	1.60	8 44.2
23	12 47 6.91	0.328	2 10 31.6	1.50	8 40.2
24	12 46 59.21	0.314	2 9 56.7	1.41	8 36.1
25	12 46 51.84	0.300	2 9 24.1	1.31	8 32.1
26	12 46 44.80	0.286	2 8 53.8	1.21	8 28.1
27	12 46 38.10	0.272	2 8 25.8	1.12	8 24.0
28	12 46 31.74	0.258	2 8 0.0	1.03	8 20.0
29	12 46 25.73	0.243	2 7 36.6	0.93	8 15.9
30	12 46 20.07	0.229	2 7 15.6	0.83	8 11.9
31	12 46 14.76	0.214	2 6 57.0	0.73	8 7.9
32	12 46 9.80	−0.199	− 2 6 40.7	+0.63	8 3.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.9	8.8	8.7	8.6
Horizontal Parallax	1.0	1.0	1.0	0.9

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 46 9.80	−0.199	− 2 6 40.7	+0.63	8 3.9
2	12 46 5.20	0.184	2 6 26.8	0.53	7 59.9
3	12 46 0.96	0.169	2 6 15.3	0.43	7 55.9
4	12 45 57.08	0.154	2 6 6.2	0.33	7 51.9
5	12 45 53.57	0.139	2 5 59.5	0.23	7 47.9
6	12 45 50.43	0.123	2 5 55.2	0.13	7 43.9
7	12 45 47.65	0.108	2 5 53.3	+0.03	7 40.0
8	12 45 45.24	0.093	2 5 53.8	−0.07	7 36.0
9	12 45 43.20	0.078	2 5 56.8	0.17	7 32.0
10	12 45 41.52	0.062	2 6 2.2	0.27	7 28.1
11	12 45 40.21	0.047	2 6 10.0	0.37	7 24.1
12	12 45 39.27	0.032	2 6 20.2	0.47	7 20.2
13	12 45 38.70	0.016	2 6 32.8	0.57	7 16.3
14	12 45 38.50	−0.001	2 6 47.8	0.67	7 12.3
15	12 45 38.67	+0.015	2 7 5.1	0.77	7 8.4
16	12 45 39.21	0.030	2 7 24.8	0.87	7 4.5
17	12 45 40.11	0.045	2 7 46.9	0.97	7 0.6
18	12 45 41.37	0.060	2 8 11.3	1.07	6 56.7
19	12 45 43.00	0.076	2 8 38.1	1.16	6 52.8
20	12 45 45.00	0.091	2 9 7.2	1.26	6 48.9
21	12 45 47.37	0.106	2 9 38.7	1.36	6 45.0
22	12 45 50.11	0.122	2 10 12.5	1.46	6 41.1
23	12 45 53.22	0.137	2 10 48.6	1.55	6 37.2
24	12 45 56.69	0.152	2 11 27.0	1.65	6 33.3
25	12 46 0.52	0.167	2 12 7.7	1.74	6 29.4
26	12 46 4.71	0.182	2 12 50.7	1.84	6 25.5
27	12 46 9.26	0.197	2 13 36.0	1.94	6 21.7
28	12 46 14.18	0.212	2 14 23.6	2.03	6 17.8
29	12 46 19.46	0.227	2 15 13.4	2.12	6 14.0
30	12 46 25.10	0.242	2 16 5.5	2.22	6 10.2
31	12 46 31.10	0.257	2 16 59.9	2.31	6 6.3
32	12 46 37.46	+0.272	− 2 17 56.5	−2.40	6 2.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.6	8.5	8.3	8.2
Horizontal Parallax	0.9	0.9	0.9	0.9

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 46 31.10	+0·257	– 2 16 59.9	–2·31	6 6.3
2	12 46 37.46	0·272	2 17 56.5	2·40	6 2.5
3	12 46 44.17	0 287	2 18 55.2	2·49	5 58.7
4	12 46 51.23	0·302	2 19 56.1	2·58	5 54.9
5	12 46 58.65	0·316	2 20 59.2	2·67	5 51.1
6	12 47 6.42	0·331	2 22 4.5	2·77	5 47.3
7	12 47 14.55	0·346	2 23 12.0	2·86	5 43.5
8	12 47 23.03	0·360	2 24 21.6	2·94	5 39.7
9	12 47 31.85	0·375	2 25 33.3	3·03	5 35.9
10	12 47 41.01	0·389	2 26 47.1	3·12	5 32.1
11	12 47 50.51	0·403	2 28 2.9	3·20	5 28.3
12	12 48 0.34	0·417	2 29 20.7	3·29	5 24.6
13	12 48 10.51	0·431	2 30 40.6	3·37	5 20.8
14	12 48 21.01	0·444	2 32 2.5	3·45	5 17.1
15	12 48 31.84	0·458	2 33 26.4	3·53	5 13.4
16	12 48 43.00	0·472	2 34 52.2	3·61	5 9.6
17	12 48 54.48	0·485	2 36 19.9	3·69	5 5.9
18	12 49 6.28	0·498	2 37 49.5	3·77	5 2.2
19	12 49 18.40	0·511	2 39 21.0	3·85	4 58.4
20	12 49 30.83	0·525	2 40 54.4	3·93	4 54.7
21	12 49 43.58	0·538	2 42 29.7	4·01	4 51.0
22	12 49 56.64	0·551	2 44 6.9	4·09	4 47.3
23	12 50 10.01	0·564	2 45 45.9	4·16	4 43.6
24	12 50 23.69	0·576	2 47 26.6	4·23	4 39.9
25	12 50 37.67	0·589	2 49 9.1	4·31	4 36.2
26	12 50 51.95	0·601	2 50 53.4	4·38	4 32.5
27	12 51 6.53	0·614	2 52 39.4	4·45	4 28.8
28	12 51 21.41	0·626	2 54 27.1	4·52	4 25.1
29	12 51 36.58	0·638	2 56 16.5	4·59	4 21.4
30	12 51 52.04	0·650	2 58 7.6	4·66	4 17.7
31	12 52 7.79	0·662	3 0 0.4	4·73	4 14.0
32	12 52 23.83	+0·674	– 3 1 54.8	–4·80	4 10.4

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.2	8.0	7.9	7.8
Horizontal Parallax	0.9	0.9	0.9	0.9

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 52 23.83	+0·674	– 3 1 54.8	–4·80	4 10.4
2	12 52 40.15	0·686	3 3 50.7	4·86	4 6.7
3	12 52 56.75	0·697	3 5 48.2	4·93	4 3.0
4	12 53 13.62	0·709	3 7 47.3	4·99	3 59.4
5	12 53 30.77	0·720	3 9 47.9	5·06	3 55.7
6	12 53 48.19	0·731	3 11 50.0	5·12	3 52.1
7	12 54 5.88	0·742	3 13 53.6	5·18	3 48.5
8	12 54 23.83	0·753	3 15 58.7	5·24	3 44.8
9	12 54 42.03	0·764	3 18 5.2	5·30	3 41.2
10	12 55 0.48	0·774	3 20 13.1	5·36	3 37.6
11	12 55 19.18	0·784	3 22 22.3	5·41	3 34.0
12	12 55 38.13	0·795	3 24 32.8	5·47	3 30.4
13	12 55 57.32	0·805	3 26 44.7	5·52	3 26.8
14	12 56 16.75	0·815	3 28 57.9	5·57	3 23.2
15	12 56 36.42	0·825	3 31 12.3	5·63	3 19.6
16	12 56 56.33	0·834	3 33 28.0	5·68	3 16.0
17	12 57 16.47	0·844	3 35 44.9	5·73	3 12.4
18	12 57 36.83	0·853	3 38 3.0	5·78	3 8.8
19	12 57 57.41	0·862	3 40 22.2	5·83	3 5.2
20	12 58 18.21	0·871	3 42 42.6	5·87	3 1.6
21	12 58 39.23	0·880	3 45 4.1	5·92	2 58.0
22	12 59 0.47	0·889	3 47 26.7	5·96	2 54.4
23	12 59 21.92	0·898	3 49 50.4	6·01	2 50.8
24	12 59 43.57	0·906	3 52 15.2	6·05	2 47.2
25	13 0 5.42	0·915	3 54 41.0	6·10	2 43.6
26	13 0 27.48	0·923	3 57 7.8	6·14	2 40.1
27	13 0 49.74	0·931	3 59 35.5	6·17	2 36.5
28	13 1 12.19	0·939	4 2 4.2	6·21	2 32.9
29	13 1 34.83	0·947	4 4 33.8	6·25	2 29.4
30	13 1 57.66	0·955	4 7 4.3	6·29	2 25.8
31	13 2 20.68	0·963	4 9 35.7	6·33	2 22.3
32	13 2 43.88	+0·970	– 4 12 8.0	–6·36	2 18.7

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.8	7.7	7.6	7.5
Horizontal Parallax	0.9	0.8	0.8	0.8

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 2 43.88	+0.970	− 4 12 8.0	−6.36	2 18.7
2	13 3 7.25	0.978	4 14 41.1	6.40	2 15.2
3	13 3 30.80	0.985	4 17 14.9	6.43	2 11.7
4	13 3 54.52	0.992	4 19 49.5	6.46	2 8.1
5	13 4 18.40	0.998	4 22 24.9	6.49	2 4.6
6	13 4 42.43	1.006	4 25 1.0	6.52	2 1.1
7	13 5 6.62	1.011	4 27 37.7	6.54	1 57.5
8	13 5 30.96	1.017	4 30 15.0	6.57	1 54.0
9	13 5 55.45	1.023	4 32 53.0	6.60	1 50.5
10	13 6 20.08	1.029	4 35 31.7	6.62	1 47.0
11	13 6 44.85	1.035	4 38 10.9	6.64	1 43.5
12	13 7 9.76	1.041	4 40 50.6	6.66	1 40.0
13	13 7 34.80	1.046	4 43 30.8	6.69	1 36.4
14	13 7 59.97	1.051	4 46 11.5	6.71	1 32.9
15	13 8 25.27	1.057	4 48 52.7	6.73	1 29.4
16	13 8 50.69	1.062	4 51 34.4	6.75	1 25.9
17	13 9 16.23	1.067	4 54 16.5	6.76	1 22.4
18	13 9 41.89	1.071	4 56 59.0	6.78	1 18.9
19	13 10 7.66	1.076	4 59 41.9	6.79	1 15.4
20	13 10 33.54	1.080	5 2 25.1	6.81	1 11.9
21	13 10 59.52	1.085	5 5 8.6	6.82	1 8.4
22	13 11 25.60	1.089	5 7 52.4	6.83	1 4.9
23	13 11 51.78	1.093	5 10 36.5	6.84	1 1.4
24	13 12 18.06	1.097	5 13 20.8	6.85	0 57.9
25	13 12 44.43	1.101	5 16 5.4	6.86	0 54.4
26	13 13 10.89	1.104	5 18 50.2	6.87	0 50.9
27	13 13 37.43	1.107	5 21 35.1	6.88	0 47.4
28	13 14 4.04	1.110	5 24 20.2	6.88	0 43.9
29	13 14 30.73	1.113	5 27 5.4	6.89	0 40.4
30	13 14 57.49	1.116	5 29 50.7	6.89	0 36.9
31	13 15 24.32	1.119	5 32 36.0	6.89	0 33.4
32	13 15 51.21	+1.122	− 5 35 21.4	−6.89	0 29.9

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 15 24.32	+1.119	− 5 32 36.0	−6.89	0 33.4
2	13 15 51.21	1.122	5 35 21.4	6.89	0 29.9
3	13 16 18.16	1.124	5 38 6.8	6.89	0 26.4
4	13 16 45.16	1.126	5 40 52.2	6.89	0 23.0
5	13 17 12.20	1.128	5 43 37.5	6.89	0 19.5
6	13 17 39.29	1.130	5 46 22.7	6.88	0 16.0
7	13 18 6.42	1.131	5 49 7.8	6.88	0 12.5
8	13 18 33.59	1.133	5 51 52.8	6.87	0 9.0
9	13 19 0.79	1.134	5 54 37.7	6.87	0 5.6
10	13 19 28.02	1.135	5 57 22.4	6.86	{ 0 2.1 { 23 58.6
11	13 19 55.27	1.136	6 0 6.8	6.85	23 55.1
12	13 20 22.54	1.137	6 2 51.0	6.84	23 51.6
13	13 20 49.83	1.137	6 5 35.0	6.83	23 48.2
14	13 21 17.13	1.138	6 8 18.7	6.81	23 44.7
15	13 21 44.43	1.138	6 11 2.1	6.80	23 41.2
16	13 22 11.74	1.138	6 13 45.1	6.79	23 37.7
17	13 22 39.05	1.138	6 16 27.8	6.77	23 34.2
18	13 23 6.36	1.138	6 19 10.1	6.76	23 30.8
19	13 23 33.66	1.137	6 21 52.0	6.74	23 27.3
20	13 24 0.95	1.137	6 24 33.5	6.72	23 23.8
21	13 24 28.23	1.136	6 27 14.6	6.70	23 20.3
22	13 24 55.49	1.135	6 29 55.2	6.68	23 16.8
23	13 25 22.73	1.134	6 32 35.3	6.66	23 13.4
24	13 25 49.94	1.133	6 35 14.8	6.64	23 9.9
25	13 26 17.12	1.132	6 37 53.8	6.61	23 6.4
26	13 26 44.27	1.130	6 40 32.2	6.59	23 2.9
27	13 27 11.38	1.129	6 43 10.0	6.56	22 59.4
28	13 27 38.45	1.127	6 45 47.2	6.54	22 56.0
29	13 28 5.47	1.125	6 48 23.8	6.51	22 52.5
30	13 28 32.43	1.123	6 50 59.7	6.48	22 49.0
31	13 28 59.33	1.120	6 53 34.8	6.45	22 45.5
32	13 29 26.17	+1.117	− 6 56 9.1	−6.41	22 42.0

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.5	7.4	7.4	7.3
Horizontal Parallax	0.8	0.8	0.8	0.8

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.3	7.3	7.3	7.3
Horizontal Parallax	0.8	0.8	0.8	0.8

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 29 26.17	+1·117	− 6 56 9.1	−6·41	22 42.0
2	13 29 52.94	1·114	6 58 42.7	6·38	22 38.5
3	13 30 19.64	1·111	7 1 15.5	6·35	22 35.0
4	13 30 46.26	1·108	7 3 47.5	6·32	22 31.5
5	13 31 12.80	1·104	7 6 18.7	6·28	22 28.1
6	13 31 39.25	1·100	7 8 49.0	6·24	22 24.6
7	13 32 5.61	1·096	7 11 18.4	6·21	22 21.1
8	13 32 31.87	1·092	7 13 46.9	6·17	22 17.6
9	13 32 58.04	1·088	7 16 14.4	6·13	22 14.1
10	13 33 24.11	1·084	7 18 41.0	6·09	22 10.6
11	13 33 50.07	1·079	7 21 6.6	6·05	22 7.1
12	13 34 15.92	1·075	7 23 31.3	6·01	22 3.6
13	13 34 41.65	1·070	7 25 55.0	5·97	22 0.1
14	13 35 7.26	1·065	7 28 17.6	5·92	21 56.6
15	13 35 32.75	1·059	7 30 39.1	5·87	21 53.1
16	13 35 58.11	1·054	7 32 59.5	5·83	21 49.6
17	13 36 23.34	1·049	7 35 18.8	5·78	21 46.1
18	13 36 48.44	1·043	7 37 37.0	5·73	21 42.6
19	13 37 13.39	1·037	7 39 54.0	5·68	21 39.0
20	13 37 38.20	1·031	7 42 9.8	5·63	21 35.5
21	13 38 2.86	1·024	7 44 24.4	5·58	21 32.0
22	13 38 27.37	1·018	7 46 37.7	5·53	21 28.4
23	13 38 51.72	1·011	7 48 49.8	5·48	21 24.9
24	13 39 15.90	1·004	7 51 0.6	5·43	21 21.3
25	13 39 39.92	0·997	7 53 10.1	5·37	21 17.8
26	13 40 3.77	0·990	7 55 18.3	5·31	21 14.3
27	13 40 27.44	0·982	7 57 25.1	5·25	21 10.7
28	13 40 50.92	0·974	7 59 30.5	5·20	21 7.2
29	13 41 14.21	0·966	8 1 34.6	5·14	21 3.6
30	13 41 37.31	0·958	8 3 37.3	5·08	21 0.1
31	13 42 0.21	0·950	8 5 38.5	5·02	20 56.5
32	13 42 22.91	+0·941	− 8 7 38.2	−4·96	20 52.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.3	7.4	7.4	7.5
Horizontal Parallax	0.8	0.8	0.8	0.8

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 42 0.21	+0·950	− 8 5 38.5	−5·02	20 56.5
2	13 42 22.91	0·941	8 7 38.2	4·96	20 52.9
3	13 42 45.40	0·933	8 9 36.4	4·89	20 49.4
4	13 43 7.68	0·924	8 11 33.1	4·83	20 45.8
5	13 43 29.75	0·915	8 13 28.2	4·76	20 42.3
6	13 43 51.60	0·906	8 15 21.8	4·70	20 38.7
7	13 44 13.22	0·896	8 17 13.8	4·64	20 35.1
8	13 44 34.61	0·886	8 19 4.3	4·57	20 31.6
9	13 44 55.77	0·877	8 20 53.2	4·50	20 28.0
10	13 45 16.69	0·867	8 22 40.4	4·43	20 24.4
11	13 45 37.37	0·857	8 24 26.0	4·36	20 20.8
12	13 45 57.81	0·846	8 26 9.9	4·29	20 17.2
13	13 46 18.00	0·836	8 27 52.1	4·22	20 13.6
14	13 46 37.94	0·825	8 29 32.6	4·15	20 10.0
15	13 46 57.62	0·815	8 31 11.4	4·08	20 6.4
16	13 47 17.04	0·804	8 32 48.5	4·01	20 2.8
17	13 47 36.20	0·793	8 34 23.8	3·93	19 59.2
18	13 47 55.09	0·781	8 35 57.3	3·86	19 55.6
19	13 48 13.71	0·770	8 37 29.1	3·79	19 51.9
20	13 48 32.05	0·758	8 38 59.1	3·71	19 48.3
21	13 48 50.11	0·746	8 40 27.2	3·63	19 44.7
22	13 49 7.88	0·734	8 41 53.4	3·55	19 41.0
23	13 49 25.35	0·722	8 43 17.8	3·48	19 37.4
24	13 49 42.52	0·709	8 44 40.3	3·40	19 33.7
25	13 49 59.40	0·697	8 46 0.9	3·32	19 30.1
26	13 50 15.98	0·684	8 47 19.6	3·24	19 26.4
27	13 50 32.25	0·671	8 48 36.3	3·16	19 22.7
28	13 50 48.20	0·658	8 49 51.1	3·08	19 19.1
29	13 51 3.83	0·645	8 51 3.9	2·99	19 15.4
30	13 51 19.14	0·631	8 52 14.7	2·91	19 11.7
31	13 51 34.13	0·618	8 53 23.5	2·83	19 8.0
32	13 51 48.79	+0·604	− 8 54 30.3	−2·74	19 4.3

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.5	7.6	7.7	7.8
Horizontal Parallax	0.8	0.8	0.8	0.9

Greenwich Mean Noon.	d	X.	Y.	Z.	Greenwich Mean Noon.	d	X.	Y.	Z.
Jan. 1	1	+.1775498	—.8871504	—.3849198	Mar. 1	61	+.9387363	—.2929482	—.1271048
2	2	.1947293	.8841198	.3836043	2	62	.9444246	.2779139	.1205812
3	3	.2118496	.8808131	.3821691	3	63	.9498263	.2627937	.1140202
4	4	.2289051	.8772314	.3806144	4	64	.9549398	.2475925	.1074240
5	5	.2458903	.8733756	.3789406	5	65	.9597634	.2323149	.1007950
6	6	+.2627999	—.8692467	—.3771483	6	66	+.9642956	—.2169657	—.0941353
7	7	.2796283	.8648458	.3752382	7	67	.9685349	.2015501	.0874470
8	8	.2963701	.8601740	.3732108	8	68	.9724799	.1860732	.0807321
9	9	.3130195	.8552328	.3710667	9	69	.9761297	.1705400	.0739928
10	10	.3295709	.8500240	.3688066	10	70	.9794835	.1549554	.0672313
11	11	+.3460188	—.8445498	—.3664314	11	71	+.9825408	—.1393246	—.0604499
12	12	.3623575	.8388120	.3639419	12	72	.9853010	.1236525	.0536507
13	13	.3785817	.8328127	.3613390	13	73	.9877635	.1079439	.0468357
14	14	.3946864	.8265540	.3586237	14	74	.9899281	.0922039	.0400072
15	15	.4106668	.8200382	.3557971	15	75	.9917946	.0764377	.0331673
16	16	+.4265181	—.8132677	—.3528602	16	76	+.9933630	—.0606503	—.0263180
17	17	.4422354	.8062451	.3498140	17	77	.9946336	.0448466	.0194614
18	18	.4578142	.7989728	.3466595	18	78	.9956067	.0290310	.0125994
19	19	.4732498	.7914533	.3433977	19	79	.9962827	—.0132079	—.0057341
20	20	.4885376	.7836892	.3400297	20	80	.9966619	+.0026182	+.0011326
21	21	+.5036734	—.7756832	—.3365566	21	81	+.9967447	+.0184429	+.0079987
22	22	.5186530	.7674379	.3329796	22	82	.9965313	.0342617	.0148625
23	23	.5334722	.7589559	.3293000	23	83	.9960222	.0500702	.0217220
24	24	.5481265	.7502401	.3255187	24	84	.9952179	.0658638	.0285751
25	25	.5626115	.7412931	.3216368	25	85	.9941188	.0816383	.0354200
26	26	+.5769232	—.7321173	—.3176554	26	86	+.9927250	+.0973894	+.0422548
27	27	.5910576	.7227151	.3135757	27	87	.9910371	.1131127	.0490775
28	28	.6050104	.7130893	.3093990	28	88	.9890577	.1288036	.0558863
29	29	.6187775	.7032428	.3051264	29	89	.9867812	.1444577	.0626791
30	30	.6323548	.6931782	.3007590	30	90	.9842140	.1600705	.0694537
31	31	+.6457382	—.6828984	—.2962982	31	91	+.9813547	+.1756373	+.0762082
Feb. 1	32	.6589233	.6724064	.2917453	Apr. 1	92	.9782041	.1911535	.0829407
2	33	.6719056	.6617054	.2871016	2	93	.9747633	.2066145	.0896490
3	34	.6846309	.6507985	.2823686	3	94	.9710332	.2220155	.0963312
4	35	.6972451	.6396890	.2775479	4	95	.9670150	.2373517	.1029852
5	36	+.7095940	—.6283805	—.2726410	5	96	+.9627100	+.2526183	+.1096087
6	37	.7217235	.6168768	.2676494	6	97	.9581196	.2678106	.1161997
7	38	.7336294	.6051816	.2625749	7	98	.9532454	.2829237	.1227564
8	39	.7453078	.5932988	.2574192	8	99	.9480893	.2979528	.1292766
9	40	.7567552	.5812324	.2521840	9	100	.9426533	.3128932	.1357582
10	41	+.7679682	—.5689867	—.2468711	10	101	+.9369392	+.3277403	+.1421994
11	42	.7789435	.5565659	.2414823	11	102	.9309493	.3424899	.1485983
12	43	.7896777	.5439742	.2360196	12	103	.9246861	.3571376	.1549531
13	44	.8001675	.5312157	.2304847	13	104	.9181521	.3716793	.1612619
14	45	.8104103	.5182948	.2248794	14	105	.9113498	.3861108	.1675231
15	46	+.8204032	—.5052159	—.2192055	15	106	+.9042817	+.4004281	+.1737349
16	47	.8301438	.4919835	.2134648	16	107	.8969505	.4146271	.1798955
17	48	.8396293	.4786018	.2076593	17	108	.8893586	.4287040	.1860033
18	49	.8488574	.4650750	.2017909	18	109	.8815085	.4426550	.1920566
19	50	.8578259	.4514074	.1958612	19	110	.8734028	.4564766	.1980539
20	51	+.8665328	—.4376031	—.1898720	20	111	+.8650442	+.4701654	+.2039936
21	52	.8749754	.4236661	.1838251	21	112	.8564354	.4837178	.2098742
22	53	.8831519	.4096007	.1777223	22	113	.8475789	.4971305	.2156944
23	54	.8910604	.3954110	.1715654	23	114	.8384773	.5104000	.2214525
24	55	.8986987	.3811009	.1653561	24	115	.8291333	.5235226	.2271468
25	56	+.9060647	—.3666746	—.1590963	25	116	+.8195493	+.5364947	+.2327757
26	57	.9131562	.3521362	.1527879	26	117	.8097278	.5493127	.2383376
27	58	.9199712	.3374901	.1464326	27	118	.7996714	.5619732	.2438310
28	59	.9265076	.3227405	.1400323	28	119	.7893830	.5744725	.2492544
29	60	.9327633	.3078918	.1335891	29	120	.7788655	.5868069	.2546061
30	61	+.9387363	—.2929482	—.1271048	30	121	+.7681216	+.5989727	+.2598845
31	62	+.9444246	—.2779139	—.1205812	31	122	+.7571544	+.6109662	+.2650879

Greenwich Mean Noon.	d	X.	Y.	Z.	Greenwich Mean Noon.	d	X.	Y.	Z.
May 1	122	+.7571544	+.6109662	+.2650879	July 1	183	—.1734712	+.9191273	+.3987833
2	123	.7459671	.6227837	.2702149	2	184	.1901216	.9163564	.3975804
3	124	.7345630	.6344218	.2752639	3	185	.2067189	.9133263	.3962650
4	125	.7229456	.6458770	.2802334	4	186	.2232581	.9100377	.3948375
5	126	.7111186	.6571456	.2851218	5	187	.2397341	.9064913	.3932984
6	127	+.6990857	+.6682242	+.2899275	6	188	—.2561418	+.9026881	+.3916482
7	128	.6868509	.6791094	.2946493	7	189	.2724761	.8986294	.3898875
8	129	.6744179	.6897982	.2992861	8	190	.2887323	.8943166	.3880167
9	130	.6617906	.7002875	.3038365	9	191	.3049057	.8897513	.3860364
10	131	.6489732	.7105743	.3082992	10	192	.3209918	.8849351	.3839474
11	132	+.6359699	+.7206558	+.3126729	11	193	—.3369860	+.8798697	+.3817503
12	133	.6227851	.7305293	.3169565	12	194	.3528839	.8745570	.3794458
13	134	.6094228	.7401923	.3211490	13	195	.3686809	.8689987	.3770348
14	135	.5958871	.7496423	.3252493	14	196	.3843726	.8631965	.3745180
15	136	.5821823	.7588772	.3292565	15	197	.3999549	.8571523	.3718962
16	137	+.5683128	+.7678949	+.3331696	16	198	—.4154241	+.8508680	+.3691703
17	138	.5542827	.7766931	.3369876	17	199	.4307762	.8443454	.3663410
18	139	.5400960	.7852698	.3407095	18	200	.4460071	.8375862	.3634088
19	140	.5257566	.7936232	.3443345	19	201	.4611128	.8305922	.3603745
20	141	.5112683	.8017514	.3478617	20	202	.4760891	.8233653	.3572391
21	142	+.4966352	+.8096522	+.3512901	21	203	—.4909321	+.8159073	+.3540032
22	143	.4818612	.8173236	.3546188	22	204	.5056379	.8082198	.3506675
23	144	.4669503	.8247637	.3578471	23	205	.5202024	.8003048	.3472329
24	145	.4519066	.8319705	.3609741	24	206	.5346215	.7921641	.3437003
25	146	.4367341	.8389421	.3639990	25	207	.5488911	.7837994	.3400705
26	147	+.4214368	+.8456766	+.3669210	26	208	—.5630070	+.7752126	+.3363444
27	148	.4060188	.8521721	.3697391	27	209	.5769650	.7664057	.3325228
28	149	.3904842	.8584266	.3724525	28	210	.5907611	.7573809	.3286067
29	150	.3748370	.8644381	.3750604	29	211	.6043913	.7481406	.3245971
30	151	.3590815	.8702045	.3775619	30	212	.6178513	.7386873	.3204950
31	152	+.3432224	+.8757240	+.3799561	31	213	—.6311365	+.7290235	+.3163016
June 1	153	.3272646	.8809947	.3822421	Aug. 1	214	.6442425	.7191518	.3120182
2	154	.3112129	.8860149	.3844193	2	215	.6571650	.7090749	.3076460
3	155	.2950720	.8907831	.3864872	3	216	.6699002	.6987957	.3031862
4	156	.2788467	.8952979	.3884454	4	217	.6824441	.6883174	.2986401
5	157	+.2625419	+.8995579	+.3902932	5	218	—.6947929	+.6776430	+.2940092
6	158	.2461625	.9035619	.3920299	6	219	.7069430	.6667758	.2892948
7	159	.2297135	.9073089	.3936551	7	220	.7188909	.6557192	.2844984
8	160	.2132000	.9107980	.3951685	8	221	.7306331	.6444767	.2796213
9	161	.1966272	.9140284	.3965698	9	222	.7421662	.6330516	.2746649
10	162	+.1800001	+.9169993	+.3978586	10	223	—.7534871	+.6214475	+.2696307
11	163	.1633236	.9197102	.3990349	11	224	.7645924	.6096678	.2645204
12	164	.1466026	.9221608	.4000986	12	225	.7754795	.5977159	.2593354
13	165	.1298418	.9243509	.4010494	13	226	.7861454	.5855952	.2540771
14	166	.1130458	.9262804	.4018871	14	227	.7965874	.5733092	.2487470
15	167	+.0962194	+.9279491	+.4026117	15	228	—.8068028	+.5608613	+.2433465
16	168	.0793673	.9293569	.4032232	16	229	.8167888	.5482549	.2378770
17	169	.0624939	.9305038	.4037214	17	230	.8265426	.5354932	.2323399
18	170	.0456037	.9313896	.4041063	18	231	.8360614	.5225793	.2267368
19	171	.0287010	.9320143	.4043779	19	232	.8453428	.5095166	.2210690
20	172	+.0117901	+.9323779	+.4045362	20	233	—.8543842	+.4963087	+.2153380
21	173	—.0051245	.9324803	.4045810	21	234	.8631827	.4829590	.2095453
22	174	.0220383	.9323214	.4045121	22	235	.8717356	.4694706	.2036924
23	175	.0389469	.9319011	.4043296	23	236	.8800402	.4558470	.1977807
24	176	.0558458	.9312193	.4040335	24	237	.8880939	.4420917	.1918118
25	177	—.0727303	+.9302761	+.4036239	25	238	—.8958938	+.4282082	+.1857874
26	178	.0895958	.9290714	.4031008	26	239	.9034370	.4142003	.1797092
27	179	.1064375	.9276052	.4024642	27	240	.9107208	.4000719	.1735788
28	180	.1232508	.9258775	.4017140	28	241	.9177425	.3858271	.1673980
29	181	.1400309	.9238885	.4008504	29	242	.9244999	.3714700	.1611686
30	182	—.1567727	+.9216382	+.3998734	30	243	—.9309905	+.3570047	+.1548926
31	183	—.1734712	+.9191273	+.3987833	31	244	—.9372117	+.3424354	+.1485716

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d					d			
Sept. 1	245	—.9431612	+.3277664	+.1422074	Nov. 1	306	—.7668468	—.5769067	—.2503024
2	246	.9488370	.3130023	.1358021	2	307	.7555303	.5889768	.2555387
3	247	.9542374	.2981477	.1293575	3	308	.7439839	.6008666	.2606967
4	248	.9593604	.2832070	.1228757	4	309	.7322114	.6125724	.2657750
5	249	.9642045	.2681849	.1163586	5	310	.7202166	.6240905	.2707721
6	250	—.9687682	+.2530860	+.1098082	6	311	—.7080034	—.6354172	—.2756863
7	251	.9730506	.2379151	.1032266	7	312	.6955758	.6465491	.2805161
8	252	.9770499	.2226767	.0966156	8	313	.6829377	.6574831	.2852603
9	253	.9807654	.2073751	.0899771	9	314	.6700928	.6682159	.2899173
10	254	.9841962	.1920147	.0833131	10	315	.6570448	.6787445	.2944857
11	255	—.9873415	+.1766000	+.0766254	11	316	—.6437976	—.6890658	—.2989643
12	256	.9902005	.1611354	.0699158	12	317	.6303553	.6991768	.3033518
13	257	.9927724	.1456250	.0631862	13	318	.6167217	.7090747	.3076468
14	258	.9950563	.1300733	.0564384	14	319	.6029005	.7187567	.3118481
15	259	.9970516	.1144845	.0496744	15	320	.5888956	.7282199	.3159444
16	260	—.9987577	+.0988628	+.0428961	16	321	—.5747108	—.7374612	—.3199644
17	261	1.0001740	.0832123	.0361052	17	322	.5603501	.7464776	.3238767
18	262	1.0012996	.0675372	.0293036	18	323	.5458174	.7552666	.3276902
19	263	1.0021339	.0518419	.0224931	19	324	.5311165	.7638255	.3314037
20	264	1.0026763	.0361307	.0156756	20	325	.5162513	.7721513	.3350158
21	265	-1.0029261	+.0204080	+.0088530	21	326	— 5012261	—.7802409	—.3385252
22	266	1.0028827	+.0046778	+.0020274	22	327	.4860454	.7880912	.3419306
23	267	1.0025455	—.0110556	—.0047993	23	328	.4707136	.7956992	.3452308
24	268	1.0019138	.0267874	.0116251	24	329	.4552353	.8030623	.3484248
25	269	1.0009872	.0425128	.0184482	25	330	.4396152	.8101778	.3515113
26	270	—.9997656	—.0582270	—.0252664	26	331	—.4238581	—.8170433	—.3544892
27	271	.9982488	.0739253	.0320775	27	332	.4079688	.8236561	.3573575
28	272	.9964366	.0896027	.0388793	28	333	.3919526	.8300136	.3601152
29	273	.9943289	.1052544	.0456697	29	334	.3758147	.8361133	.3627612
30	274	.9919261	.1208753	.0524466	30	335	.3595602	.8419532	.3652946
Oct. 1	275	—.9892285	—.1364604	—.0592080	Dec. 1	336	—.3431943	—.8475315	—.3677144
2	276	.9862368	.1520048	.0659517	2	337	.3267224	.8528464	.3700199
3	277	.9829519	.1675035	.0726756	3	338	.3101502	.8578961	.3722105
4	278	.9793749	.1829516	.0793774	4	339	.2934831	.8626791	.3742856
5	279	.9755069	.1983443	.0860552	5	340	.2767265	.8671941	.3762447
6	280	—.9713491	—.2136769	—.0927071	6	341	—.2598857	—.8714398	—.3780872
7	281	.9669025	.2289446	.0993309	7	342	.2429660	.8754151	.3798124
8	282	.9621684	.2441426	.1059246	8	343	.2259728	.8791190	.3814199
9	283	.9571485	.2592664	.1124863	9	344	.2089110	.8825506	.3829094
10	284	.9518446	.2743116	.1190141	10	345	.1917858	.8857091	.3842804
11	285	—.9462583	—.2892740	—.1255061	11	346	—.1746024	—.8885937	—.3855326
12	286	.9403911	.3041494	.1319604	12	347	.1573658	.8912038	.3866656
13	287	.9342449	.3189335	.1383752	13	348	.1400809	.8935385	.3876790
14	288	.9278214	.3336222	.1447487	14	349	.1227528	.8955972	.3885726
15	289	.9211222	.3482113	.1510791	15	350	.1053866	.8973793	.3893460
16	290	—.9141489	—.3626967	—.1573646	16	351	—.0879872	—.8988842	—.3899990
17	291	.9069031	.3770742	.1636033	17	352	.0705601	.9001111	.3905313
18	292	.8993865	.3913399	.1697934	18	353	.0531098	.9010592	.3909425
19	293	.8916010	.4054895	.1759331	19	354	.0356418	.9017281	.3912323
20	294	.8835482	.4195188	.1820206	20	355	.0181613	.9021172	.3914006
21	295	—.8752300	—.4334235	—.1880540	21	356	—.0006734	—.9022261	—.3914471
22	296	.8666483	.4471993	.1940312	22	357	+.0168166	.9020541	.3913718
23	297	.8578052	.4608417	.1999503	23	358	.0343031	.9016009	.3911745
24	298	.8487026	.4743465	.2058094	24	359	.0517805	.9008664	.3908551
25	299	.8393427	.4877094	.2116068	25	360	.0692430	.8998506	.3904136
26	300	—.8297281	—.5009261	—.2173408	26	361	+.0866851	—.8985534	—.3898502
27	301	.8198614	.5139920	.2230093	27	362	.1041007	.8969749	.3891649
28	302	.8097452	.5269026	.2286102	28	363	.1214837	.8951156	.3883578
29	303	.7993825	.5396537	.2341417	29	364	.1388280	.8929762	.3874293
30	304	.7887764	.5522410	.2396021	30	365	.1561290	.8905575	.3863798
31	305	—.7779300	—.5646601	—.2449896	31	366	+.1733805	—.8878604	—.3852097
32	306	—.7668468	—.5769067	—.2503024	32	367	+.1905770	—.8848857	—.3839193

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	181° 8′ 21″.6	−4° 15′ 44″.6	227° 48′ 12″.1	−0° 34′ 6″.2	250° 35′ 13″.5	+1° 41′ 23″.8
1.5	187 16 50.8	3 55 37.3	234 24 40.6	+0 0 50.7	257 21 13.0	2 14 30.5
2.0	193 29 23.3	3 32 30.8	241 7 43.7	0 36 20.7	264 13 14.5	2 46 9.9
2.5	199 46 34.9	3 6 33.9	247 57 44.3	1 11 54.6	271 11 30.5	3 15 49.4
3.0	206 9 0.5	2 37 57.2	254 54 58.1	1 47 0.3	278 16 5.3	3 42 55.3
3.5	212 37 13.2	2 6 54.3	261 59 31.3	2 21 2.3	285 26 53.5	4 6 54.0
4.0	219 11 42.9	1 33 41.9	269 11 19.1	2 53 22.7	292 43 38.7	4 27 12.8
4.5	225 52 54.7	0 58 40.4	276 30 3.2	3 23 21.7	300 5 52.1	4 43 21.2
5.0	232 41 7.9	−0 22 14.0	283 55 11.3	3 50 19.5	307 32 51.7	4 54 52.5
5.5	239 36 33.8	+0 15 8.2	291 25 56.3	4 13 37.5	315 3 43.5	5 1 25.5
6.0	246 39 14.0	0 52 53.0	299 1 16.8	4 32 40.5	322 37 22.2	5 2 45.9
6.5	253 48 58.8	1 30 23.0	306 39 59.1	4 46 58.6	330 12 34.2	4 58 47.3
7.0	261 5 26.6	2 6 57.2	314 20 39.6	4 56 9.4	337 48 0.0	4 49 32.5
7.5	268 28 2.4	2 41 52.2	322 1 48.9	4 59 59.1	345 22 18.0	4 35 13.3
8.0	275 55 58.5	3 14 23.9	329 41 55.8	4 58 23.6	352 54 8.7	4 16 10.1
8.5	283 28 14.6	3 43 48.9	337 19 31.3	4 51 28.6	0 22 18.0	3 52 50.5
9.0	291 3 40.5	4 9 27.4	344 53 13.6	4 39 28.9	7 45 40.3	3 25 48.2
9.5	298 40 57.7	4 30 44.4	352 21 50.9	4 22 47.5	15 3 20.7	2 55 40.8
10.0	306 18 43.3	4 47 12.3	359 44 24.3	4 1 53.3	22 14 37.0	2 23 8.1
10.5	313 55 33.6	4 58 31.8	7 0 9.5	3 37 19.8	29 18 59.7	1 48 50.1
11.0	321 30 7.9	5 4 32.8	14 8 37.0	3 9 42.9	36 16 12.3	1 13 25.5
11.5	329 1 12.1	5 5 14.3	21 9 31.8	2 39 39.3	43 6 10.2	0 37 31.0
12.0	336 27 41.8	5 0 44.2	28 2 51.7	2 7 44.7	49 48 59.4	+0 1 39.9
12.5	343 48 44.5	4 51 17.8	34 48 45.9	1 34 33.4	56 24 54.9	−0 33 37.8
13.0	351 3 40.5	4 37 16.6	41 27 33.0	1 0 37.5	62 54 19.3	1 7 56.0
13.5	358 12 3.6	4 19 6.5	47 59 38.8	+0 26 26.4	69 17 40.8	1 40 51.8
14.0	5 13 40.3	3 57 16.4	54 25 34.4	−0 7 33.6	75 35 32.1	2 12 5.7
14.5	12 8 28.5	3 32 16.7	60 45 54.4	0 40 58.5	81 48 28.7	2 41 20.8
15.0	18 56 36.1	3 4 38.2	67 1 15.4	1 13 26.9	87 57 7.6	3 8 22.9
15.5	25 38 18.8	2 34 51.8	73 12 14.5	1 44 39.6	94 2 6.8	3 32 59.7
16.0	32 13 58.5	2 3 26.9	79 19 29.0	2 14 19.3	100 4 4.0	3 55 0.8
16.5	38 44 1.6	1 30 51.9	85 23 34.9	2 42 10.5	106 3 36.3	4 14 17.1
17.0	45 8 57.0	0 57 33.7	91 25 6.5	3 7 58.9	112 1 19.1	4 30 40.7
17.5	51 29 14.9	+0 23 57.4	97 24 35.8	3 31 31.8	117 57 46.1	4 44 4.7
18.0	57 45 26.1	−0 9 33.1	103 22 32.0	3 52 37.5	123 53 28.5	4 54 23.3
18.5	63 58 0.6	0 42 35.5	109 19 21.7	4 11 5.5	129 48 55.1	5 1 31.4
19.0	70 7 27.2	1 14 49.0	115 15 28.5	4 26 46.3	135 44 31.9	5 5 25.1
19.5	76 14 12.7	1 45 54.0	121 11 13.1	4 39 31.6	141 40 42.2	5 6 1.6
20.0	82 18 41.7	2 15 32.1	127 6 53.1	4 49 14.3	147 37 46.4	5 3 19.0
20.5	88 21 16.3	2 43 26.2	133 2 43.8	4 55 48.6	153 36 2.4	4 57 17.1
21.0	94 22 16.1	3 9 20.5	138 58 58.3	4 59 10.1	159 35 45.2	4 47 57.1
21.5	100 21 58.2	3 33 0.4	144 55 47.9	4 59 16.0	165 37 7.9	4 35 22.0
22.0	106 20 37.5	3 54 12.8	150 53 22.3	4 56 5.1	171 40 21.1	4 19 36.6
22.5	112 18 26.8	4 12 45.8	156 51 50.2	4 49 38.0	177 45 34.0	4 0 47.9
23.0	118 15 37.3	4 28 29.2	162 51 20.0	4 39 56.9	183 52 54.1	3 39 5.0
23.5	124 12 19.2	4 41 14.4	168 52 0.2	4 27 6.1	190 2 28.2	3 14 39.2
24.0	130 8 42.1	4 50 54.3	174 53 59.8	4 11 11.6	196 14 22.5	2 47 44.1
24.5	136 4 55.4	4 57 23.6	180 57 29.0	3 52 21.3	202 28 43.3	2 18 35.7
25.0	142 1 8.9	5 0 38.6	187 2 39.6	3 30 44.9	208 45 37.2	1 47 31.9
25.5	147 57 33.2	5 0 37.4	193 9 45.2	3 6 33.9	215 5 11.5	1 14 53.0
26.0	153 54 20.2	4 57 19.6	199 19 1.9	2 40 1.5	221 27 34.8	0 41 0.9
26.5	159 51 43.7	4 50 46.5	205 30 47.7	2 11 22.5	227 52 56.7	−0 6 19.3
27.0	165 49 59.5	4 41 0.8	211 45 23.3	1 40 53.4	234 21 28.0	+0 28 46.3
27.5	171 49 25.8	4 28 6.7	218 3 11.6	1 8 52.6	240 53 20.5	1 3 49.4
28.0	177 50 23.6	4 12 9.8	224 24 37.0	0 35 40.1	247 28 46.8	1 38 22.2
28.5	183 53 16.4	3 53 17.0	230 50 5.5	−0 1 37.6	254 7 59.7	2 11 55.8
29.0	189 58 30.4	3 31 36.8	237 20 3.6	+0 32 51.3	260 51 11.4	2 44 0.9
29.5	196 6 34.3	3 7 18.9	243 54 57.9	1 7 20.9	267 38 33.1	3 14 8.0
30.0	202 17 59.1	2 40 34.6	250 35 13.5	1 41 23.8	274 30 13.7	3 41 47.4
30.5	208 33 17.4	2 11 37.1	257 21 13.0	2 14 30.5	281 26 19.0	4 6 30.0
31.0	214 53 3.0	1 40 41.3	264 13 14.5	2 46 9.9	288 26 50.2	4 27 47.6
31.5	221 17 50.1	−1 8 4.4	271 11 30.5	+3 15 49.4	295 31 43.0	+4 45 14.0

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		MAY.		JUNE.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	302° 40′ 47″.4	+4° 58′ 25″.7	342° 5′ 39″.1	+4° 50′ 15″.5	34° 27′ 31″.9	+1° 16′ 6″.5
1.5	309 53 44.6	5 7 2.1	349 15 44.0	4 32 13.6	41 13 5.2	0 39 32.7
2.0	317 10 8.2	5 10 47.4	356 25 16.7	4 9 58.1	47 55 34.7	+0 2 43.9
2.5	324 29 24.3	5 9 31.3	3 33 46.4	3 43 51.9	54 34 53.8	−0 33 48.2
3.0	331 50 50.9	5 3 10.3	10 40 41.4	3 14 22.9	61 10 55.9	1 9 33.5
3.5	339 13 39.1	4 51 46.9	17 45 30.2	2 42 2.7	67 43 36.0	1 44 3.6
4.0	346 36 54.7	4 35 30.9	24 47 41.3	2 7 25.7	74 12 49.6	2 16 52.4
4.5	353 59 40.0	4 14 40.5	31 46 46.0	1 31 8.2	80 38 33.9	2 47 36.7
5.0	1 20 56.4	3 49 40.0	38 42 17.0	0 53 47.6	87 0 47.8	3 15 56.9
5.5	8 39 46.5	3 20 59.8	45 33 51.3	+0 16 0.6	93 19 32.8	3 41 15.7
6.0	15 55 16.4	2 49 15.3	52 21 9.5	−0 21 36.7	99 34 53.4	4 4 18.9
6.5	23 6 37.7	2 15 4.8	59 3 56.7	0 58 31.1	105 46 56.5	4 23 55.9
7.0	30 13 8.6	1 39 7.6	65 42 3.1	1 34 12.1	111 55 52.4	4 40 18.3
7.5	37 14 16.4	1 2 4.4	72 15 23.5	2 8 12.4	118 1 54.2	4 53 20.6
8.0	44 9 37.1	+0 24 34.7	78 43 58.7	2 40 8.1	124 5 18.7	5 2 59.2
8.5	50 58 55.8	−0 12 45.8	85 7 54.0	3 9 39.2	130 6 25.6	5 9 12.5
9.0	57 42 6.3	0 49 24.4	91 27 19.4	3 36 29.2	136 5 38.3	5 12 0.8
9.5	64 19 10.7	1 24 51.1	97 42 29.8	4 0 24.9	142 3 22.3	5 11 25.7
10.0	70 50 18.3	1 58 40.4	103 53 44.4	4 21 16.0	148 0 5.0	5 7 29.5
10.5	77 15 45.2	2 30 30.4	110 1 25.2	4 38 54.8	153 56 16.7	5 0 15.3
11.0	83 35 53.0	3 0 2.6	116 5 57.6	4 53 15.6	159 52 30.5	4 49 47.6
11.5	89 51 7.6	3 27 2.4	122 7 50.7	5 4 15.0	165 49 20.6	4 36 12.2
12.0	96 1 58.4	3 51 17.7	128 7 35.3	5 11 51.0	171 47 22.0	4 19 34.8
12.5	102 8 57.8	4 12 39.0	134 5 43.2	5 16 2.5	177 47 11.1	4 0 1.9
13.0	108 12 40.4	4 30 58.4	140 2 47.3	5 16 49.5	183 49 24.3	3 37 41.4
13.5	114 13 41.7	4 46 9.9	145 59 22.2	5 14 12.8	189 54 37.7	3 12 42.8
14.0	120 12 37.0	4 58 8.9	151 56 3.3	5 8 14.5	196 3 26.3	2 45 17.0
14.5	126 10 1.1	5 6 51.6	157 53 25.2	4 58 57.0	202 16 23.7	2 15 36.5
15.0	132 6 29.4	5 12 15.4	163 52 1.7	4 46 23.5	208 34 0.4	1 43 56.2
15.5	138 2 36.4	5 14 18.4	169 52 25.6	4 30 38.6	214 56 44.5	1 10 33.9
16.0	143 58 54.9	5 12 59.8	175 55 8.7	4 11 47.5	221 24 59.5	0 35 50.0
16.5	149 55 55.3	5 8 19.1	182 0 40.8	3 49 57.5	227 59 3.8	−0 0 8.4
17.0	155 54 5.7	5 0 17.3	188 9 29.0	3 25 17.5	234 39 9.8	+0 36 3.9
17.5	161 53 51.9	4 48 56.5	194 21 58.2	2 57 58.4	241 25 22.1	1 12 16.5
18.0	167 55 37.5	4 34 20.1	200 38 29.7	2 28 13.5	248 17 37.7	1 47 56.0
18.5	173 59 43.8	4 16 33.2	206 59 20.9	1 56 19.4	255 15 44.3	2 22 27.0
19.0	180 6 29.1	3 55 42.7	213 24 45.2	1 22 34.3	262 19 20.9	2 55 12.9
19.5	186 16 8.4	3 31 57.9	219 54 51.5	0 47 21.1	269 27 57.4	3 25 35.1
20.0	192 28 53.7	3 5 30.3	226 29 43.6	−0 11 5.6	276 40 55.6	3 52 57.5
20.5	198 44 55.9	2 36 34.2	233 9 20.1	+0 25 44.1	283 57 29.3	4 16 46.1
21.0	205 4 19.9	2 5 26.3	239 53 34.5	1 2 37.2	291 16 46.3	4 36 30.6
21.5	211 27 10.5	1 32 26.3	246 42 14.6	1 39 0.1	298 37 51.3	4 51 45.7
22.0	217 53 20.4	0 57 56.6	253 35 3.5	2 14 17.6	305 59 47.4	5 2 12.5
22.5	224 23 16.1	−0 22 22.1	260 31 40.2	2 47 54.6	313 21 37.9	5 7 39.1
23.0	230 56 29.3	+0 13 49.9	267 31 40.4	3 19 15.8	320 42 29.2	5 8 1.4
23.5	237 33 5.1	0 50 10.4	274 34 36.2	3 47 47.8	328 1 32.7	5 3 21.8
24.0	244 12 59.4	1 26 8.8	281 39 56.6	4 12 59.5	335 18 6.1	4 53 49.4
24.5	250 56 6.9	2 1 13.8	288 47 10.0	4 34 22.9	342 31 34.7	4 39 39.6
25.0	257 42 21.5	2 34 53.5	295 55 45.2	4 51 34.8	349 41 30.9	4 21 13.0
25.5	264 31 37.0	3 6 36.4	303 5 10.6	5 4 16.2	356 47 35.4	3 58 53.8
26.0	271 23 46.7	3 35 51.6	310 14 55.6	5 12 13.9	3 49 36.3	3 33 9.3
26.5	278 18 43.0	4 2 10.0	317 24 31.8	5 15 20.0	10 47 27.6	3 4 29.0
27.0	285 16 17.4	4 25 4.7	324 33 33.3	5 13 32.5	17 41 9.1	2 33 23.6
27.5	292 16 19.9	4 44 11.0	331 41 37.1	5 6 54.9	24 30 44.4	2 0 24.7
28.0	299 18 38.7	4 59 7.5	338 48 23.0	4 55 35.7	31 16 20.3	1 26 3.8
28.5	306 23 0.6	5 9 37.0	345 53 33.2	4 39 48.4	37 58 6.4	0 50 51.8
29.0	313 29 10.9	5 15 25.5	352 56 52.3	4 19 50.4	44 36 13.6	+0 15 18.7
29.5	320 36 52.7	5 16 24.6	359 58 7.4	3 56 3.7	51 10 52.8	−0 20 6.5
30.0	327 45 47.0	5 12 30.8	6 57 7.3	3 28 53.7	57 42 14.5	0 54 56.0
30.5	334 55 31.0	5 3 45.4	13 53 42.2	2 58 48.2	64 10 28.0	1 28 43.6
31.0	342 5 39.1	4 50 15.5	20 47 43.1	2 26 17.1	70 35 42.4	2 1 5.0
31.5	349 15 44.0	+4 32 13.6	27 39 2.0	+1 51 52.4	76 58 5.1	−2 31 38.0

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	70° 35′ 42″.4	−2° 1′ 5″.0	117° 8′ 58″.4	−4° 46′ 7″.8	161° 54′ 29″.0	−4° 20′ 52″.6
1.5	76 58 5.1	2 31 38.0	123 10 57.6	4 53 54.9	167 49 59.3	4 3 31.1
2.0	83 17 42.4	3 0 2.7	129 11 27.2	4 58 23.0	173 45 42.7	3 43 29.0
2.5	89 34 39.5	3 26 1.1	135 10 35.8	4 59 31.9	179 41 52.4	3 20 57.8
3.0	95 49 1.2	3 49 18.0	141 8 32.2	4 57 22.8	185 38 42.9	2 56 10.2
3.5	102 0 51.7	4 9 40.5	147 5 26.3	4 51 58.8	191 36 30.8	2 29 20.3
4.0	108 10 15.7	4 26 58.3	153 1 29.2	4 43 24.8	197 35 34.8	2 0 43.2
4.5	114 17 18.7	4 41 3.5	158 56 54.0	4 31 47.0	203 36 15.9	1 30 35.1
5.0	120 22 7.4	4 51 50.5	164 51 55.9	4 17 12.8	209 38 57.6	0 59 13.2
5.5	126 24 50.0	4 59 16.2	170 46 52.6	3 59 51.2	215 44 5.6	−0 26 55.7
6.0	132 25 37.2	5 3 19.4	176 42 4.5	3 39 52.0	221 52 8.1	+0 5 58.0
6.5	138 24 41.7	5 4 0.8	182 37 55.0	3 17 26.0	228 3 35.0	0 39 7.6
7.0	144 22 19.1	5 1 22.8	188 34 50.1	2 52 45.1	234 18 57.6	1 12 11.5
7.5	150 18 47.8	4 55 29.0	194 33 18.8	2 26 2.0	240 38 47.9	1 44 46.8
8.0	156 14 28.9	4 46 24.5	200 33 52.7	1 57 30.5	247 3 37.8	2 16 29.4
8.5	162 9 46.8	4 34 15.5	206 37 5.8	1 27 25.4	253 33 58.2	2 46 53.7
9.0	168 5 8.5	4 19 8.9	212 43 34.1	0 56 2.5	260 10 17.5	3 15 32.7
9.5	174 1 3.8	4 1 12.7	218 53 54.7	−0 23 39.5	266 53 0.6	3 41 58.4
10.0	179 58 5.1	3 40 35.7	225 8 45.3	+0 9 24.7	273 42 27.1	4 5 41.7
10.5	185 56 47.0	3 17 27.2	231 28 43.5	0 42 49.2	280 38 49.5	4 26 13.3
11.0	191 57 45.7	2 51 58.2	237 54 25.4	1 16 11.1	287 42 11.7	4 43 4.3
11.5	198 1 39.1	2 24 20.3	244 26 24.6	1 49 5.1	294 52 26.8	4 55 47.0
12.0	204 9 5.5	1 54 46.6	251 5 10.6	2 21 3.8	302 9 16.4	5 3 56.4
12.5	210 20 43.1	1 23 31.9	257 51 7.2	2 51 37.2	309 32 9.1	5 7 11.7
13.0	216 37 9.4	0 50 53.2	264 44 30.3	3 20 13.5	317 0 20.3	5 5 17.7
13.5	222 59 0.1	−0 17 9.4	271 45 26.4	3 46 19.3	324 32 53.2	4 58 6.3
14.0	229 26 47.7	+0 17 17.6	278 53 50.4	4 9 20.6	332 8 40.4	4 45 37.6
14.5	236 1 0.5	0 52 3.2	286 9 24.3	4 28 43.8	339 46 25.7	4 28 1.0
15.0	242 42 1.3	1 26 39.9	293 31 36.0	4 43 57.4	347 24 47.9	4 5 35.0
15.5	249 30 5.2	2 0 37.0	300 59 39.3	4 54 33.4	355 2 24.1	3 38 46.9
16.0	256 25 18.6	2 33 21.1	308 32 34.4	5 0 9.4	2 37 53.7	3 8 11.5
16.5	263 27 37.1	3 4 16.7	316 9 9.6	5 0 30.3	10 10 1.5	2 34 29.3
17.0	270 36 45.0	3 32 46.9	323 48 4.4	4 55 29.2	17 37 41.0	1 58 24.9
17.5	277 52 14.0	3 58 14.9	331 27 52.7	4 45 9.0	24 59 56.2	1 20 44.1
18.0	285 13 23.2	4 20 5.1	339 7 6.8	4 29 41.7	32 16 3.5	0 42 12.3
18.5	292 39 19.6	4 37 45.0	346 44 21.9	4 9 28.7	39 25 32.0	+0 3 32.8
19.0	300 8 59.9	4 50 47.4	354 18 19.7	3 44 59.0	46 28 3.0	−0 34 34.8
19.5	307 41 13.1	4 58 51.2	1 47 51.5	3 16 47.8	53 23 29.5	1 11 35.2
20.0	315 14 42.4	5 1 43.2	9 12 0.8	2 45 34.2	60 11 54.9	1 46 57.9
20.5	322 48 10.2	4 59 19.0	16 30 4.5	2 11 59.7	66 53 31.1	2 20 17.2
21.0	330 20 20.4	4 51 42.8	23 41 33.3	1 36 45.7	73 28 37.2	2 51 12.0
21.5	337 50 2.7	4 39 7.2	30 46 11.0	1 0 32.4	79 57 37.5	3 19 25.2
22.0	345 16 14.9	4 21 52.4	37 43 53.2	+0 23 57.8	86 21 0.6	3 44 43.6
22.5	352 38 5.1	4 0 24.7	44 34 45.6	−0 12 23.6	92 39 17.2	4 6 56.9
23.0	359 54 53.1	3 35 14.8	51 19 2.6	0 48 0.6	98 52 59.8	4 25 57.6
23.5	7 6 10.3	3 6 56.6	57 57 4.7	1 22 25.9	105 2 41.4	4 41 40.1
24.0	14 11 39.9	2 36 5.3	64 29 16.9	1 55 15.5	111 8 55.0	4 54 0.8
24.5	21 11 15.5	2 3 16.7	70 56 7.3	2 26 8.9	117 12 12.3	5 2 57.7
25.0	28 4 59.5	1 29 5.5	77 18 5.5	2 54 48.3	123 13 4.4	5 8 30.1
25.5	34 53 1.6	0 54 5.4	83 35 41.7	3 20 58.8	129 12 0.1	5 10 38.2
26.0	41 35 37.1	+0 18 47.8	89 49 25.5	3 44 27.9	135 9 27.1	5 9 23.7
26.5	48 13 5.2	−0 16 17.7	95 59 45.8	4 5 5.0	141 5 50.6	5 4 49.2
27.0	54 45 47.8	0 50 44.2	102 7 9.6	4 22 41.5	147 1 33.6	4 56 58.6
27.5	61 14 7.7	1 24 6.8	108 12 2.2	4 37 10.5	152 56 57.3	4 45 57.0
28.0	67 38 28.0	1 56 2.8	114 14 46.6	4 48 26.8	158 52 21.0	4 31 50.5
28.5	73 59 11.4	2 26 11.9	120 15 43.7	4 56 26.6	164 48 1.6	4 14 47.1
29.0	80 16 39.2	2 54 16.0	126 15 12.0	5 1 7.7	170 44 14.9	3 54 55.9
29.5	86 31 11.0	3 19 58.8	132 13 27.9	5 2 29.4	176 41 15.2	3 32 27.7
30.0	92 43 4.5	3 43 6.2	138 10 46.0	5 0 32.6	182 39 15.6	3 7 34.8
30.5	98 52 35.3	4 3 26.1	144 7 19.5	4 55 19.8	188 38 28.4	2 40 31.1
31.0	104 59 57.0	4 20 48.1	150 3 20.3	4 46 54.9	194 39 5.9	2 11 32.3
31.5	111 5 21.3	−4 35 4.1	155 58 59.8	−4 35 23.4	200 41 20.0	−1 40 55.5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		NOVEMBER.		DECEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	194° 39′ 5″.9	−2° 11′ 32″.3	240° 56′ 11″.4	+1° 57′ 14″.8	276° 58′ 6″.1	+4° 24′ 47″.0
1.5	200 41 20.0	1 40 55.5	247 22 53.0	2 29 40.1	283 51 24.4	4 42 40.6
2.0	206 45 22.8	1 8 58.5	253 52 54.5	3 0 25.6	290 47 23.8	4 56 32.6
2.5	212 51 27.6	0 36 1.0	260 26 18.0	3 29 4.8	297 45 40.6	5 6 6.0
3.0	218 59 48.9	−0 2 24.4	267 3 5.4	3 55 11.5	304 45 51.3	5 11 8.3
3.5	225 10 42.1	+0 31 29.3	273 43 18.5	4 18 20.6	311 47 32.9	5 11 31.7
4.0	231 24 23.8	1 5 17.7	280 26 58.0	4 38 8.6	318 50 24.0	5 7 13.5
4.5	237 41 11.9	1 38 37.0	287 14 4.1	4 54 13.8	325 54 5.2	4 58 15.7
5.0	244 1 25.0	2 11 2.6	294 4 34.9	5 6 17.1	332 58 18.7	4 44 45.2
5.5	250 25 22.5	2 42 9.8	300 58 28.1	5 14 2.5	340 2 48.9	4 26 54.1
6.0	256 53 24.2	3 11 33.3	307 55 39.5	5 17 16.6	347 7 22.0	4 4 58.4
6.5	263 25 49.7	3 38 47.6	314 56 3.0	5 15 50.3	354 11 45.4	3 39 18.9
7.0	270 2 57.7	4 3 27.1	321 59 29.5	5 9 38.7	1 15 47.8	3 10 19.7
7.5	276 45 5.1	4 25 6.5	329 5 46.8	4 58 41.5	8 19 18.2	2 38 28.7
8.0	283 32 26.1	4 43 20.9	336 14 39.0	4 43 3.4	15 22 5.5	2 4 16.6
8.5	290 25 10.5	4 57 46.7	343 25 46.7	4 22 54.7	22 23 57.8	1 28 16.6
9.0	297 23 22.3	5 8 2.4	350 38 46.2	3 58 31.1	29 24 42.3	0 51 3.4
9.5	304 26 59.6	5 13 48.4	357 53 8.7	3 30 14.8	36 24 4.5	+0 13 13.1
10.0	311 35 53.1	5 14 48.5	5 8 22.7	2 58 32.5	43 21 48.6	−0 24 38.2
10.5	318 49 45.1	5 10 51.4	12 23 52.4	2 23 56.1	50 17 37.0	1 1 54.7
11.0	326 8 8.5	5 1 51.3	19 38 59.0	1 47 2.5	57 11 10.8	1 38 2.0
11.5	333 30 27.3	4 47 48.6	26 53 2.6	1 8 31.1	64 2 9.9	2 12 27.8
12.0	340 55 56.7	4 28 50.7	34 5 22.4	+0 29 3.7	70 50 14.3	2 44 42.6
12.5	348 23 43.9	4 5 13.2	41 15 17.4	−0 10 37.8	77 35 4.1	3 14 20.6
13.0	355 52 49.9	3 37 19.4	48 22 8.2	0 49 51.2	84 16 21.1	3 40 59.5
13.5	3 22 11.7	3 5 39.8	55 25 18.3	1 27 57.5	90 53 49.2	4 4 21.8
14.0	10 50 44.2	2 30 51.2	62 24 15.5	2 4 20.4	97 27 15.4	4 24 13.7
14.5	18 17 22.8	1 53 35.5	69 18 32.6	2 38 27.9	103 56 30.6	4 40 26.1
15.0	25 41 6.0	1 14 37.7	76 7 48.0	3 9 52.7	110 21 29.7	4 52 53.5
15.5	33 0 57.9	+0 34 44.4	82 51 46.1	3 38 13.0	116 42 13.0	5 1 34.3
16.0	40 16 9.5	−0 5 19.1	89 30 18.8	4 3 11.7	122 58 45.2	5 6 29.6
16.5	47 26 0.2	0 44 49.2	96 3 24.6	4 24 36.6	129 11 16.2	5 7 43.7
17.0	54 29 58.6	1 23 6.6	102 31 8.2	4 42 19.9	135 20 0.6	5 5 22.6
17.5	61 27 42.7	1 59 36.3	108 53 40.0	4 56 17.5	141 25 17.9	4 59 34.1
18.0	68 19 1.0	2 33 48.4	115 11 16.6	5 6 28.5	147 27 31.4	4 50 27.3
18.5	75 3 50.4	3 5 19.0	121 24 19.2	5 12 54.8	153 27 8.5	4 38 12.1
19.0	81 42 16.0	3 33 48.8	127 33 12.9	5 15 40.1	159 24 39.8	4 22 59.1
19.5	88 14 30.3	3 59 3.5	133 38 26.4	5 14 49.8	165 20 39.0	4 4 59.5
20.0	94 40 52.0	4 20 52.8	139 40 31.6	5 10 30.4	171 15 42.2	3 44 24.6
20.5	101 1 44.9	4 39 10.5	145 40 2.2	5 2 49.3	177 10 27.4	3 21 26.3
21.0	107 17 36.2	4 53 52.7	151 37 33.6	4 51 54.4	183 5 33.7	2 56 16.8
21.5	113 28 56.5	5 4 58.1	157 33 42.1	4 37 54.2	189 1 41.8	2 29 8.7
22.0	119 36 18.6	5 12 27.3	163 29 4.6	4 20 58.0	194 59 31.7	2 0 15.7
22.5	125 40 16.1	5 16 22.4	169 24 18.1	4 1 15.1	200 59 43.5	1 29 52.3
23.0	131 41 22.7	5 16 46.6	175 19 59.1	3 38 55.9	207 2 56.0	0 58 14.1
23.5	137 40 12.5	5 13 44.1	181 16 43.0	3 14 11.5	213 9 46.1	−0 25 38.4
24.0	143 37 20.2	5 7 19.8	187 15 3.6	2 47 14.0	219 20 48.1	+0 7 35.8
24.5	149 33 19.2	4 57 39.4	193 15 33.1	2 18 16.8	225 36 32.8	0 41 7.5
25.0	155 28 40.9	4 44 49.5	199 18 40.8	1 47 34.9	231 57 26.5	1 14 33.6
25.5	161 23 55.2	4 28 57.5	205 24 53.5	1 15 24.8	238 23 50.0	1 47 29.0
26.0	167 19 30.7	4 10 11.6	211 34 34.3	0 42 5.4	244 55 57.9	2 19 26.2
26.5	173 15 53.6	3 48 41.6	217 48 3.4	−0 7 56.9	251 33 57.7	2 49 56.2
27.0	179 13 28.0	3 24 38.1	224 5 36.0	+0 26 37.8	258 17 48.5	3 18 28.7
27.5	185 12 35.7	2 58 13.5	230 27 23.3	1 1 13.8	265 7 21.3	3 44 33.1
28.0	191 13 36.5	2 29 41.9	236 53 31.9	1 35 24.7	272 2 18.0	4 7 38.7
28.5	197 16 47.6	1 59 18.6	243 24 3.4	2 8 42.3	279 2 12.5	4 27 16.7
29.0	203 22 23.4	1 27 21.5	249 58 55.0	2 40 37.3	286 6 30.5	4 43 0.8
29.5	209 30 36.6	0 54 9.7	256 37 58.9	3 10 40.2	293 14 31.2	4 54 28.4
30.0	215 41 37.6	−0 20 4.5	263 21 3.1	3 38 21.4	300 25 28.9	5 1 22.0
30.5	221 55 35.3	+0 14 31.4	270 7 51.8	4 3 12.6	307 38 34.5	5 3 29.8
31.0	228 12 36.6	0 49 13.6	276 58 6.1	4 24 47.0	314 52 58.3	5 0 46.2
31.5	234 32 47.1	+1 23 36.9	283 51 24.4	+4 42 40.6	322 7 51.4	+4 53 12.7

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

Sidereal 0h.	Apparent Obliquity.	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Parallax.	
1864.	23° 27′						
0	18″.76	+14″.83	+0s.91	0″.00	-20″.80	8″.72	235° 27′.2
10	18.78	15.16	0.93	1.37	20.79	8.72	234 55.5
20	18.84	15.38	0.94	2.74	20.77	8.72	234 23.8
30	18.95	15.46	0.95	4.12	20.74	8.71	233 52.2
40	19.06	15.38	0.93	5.49	20.71	8.69	233 20.5
50	19.16	15.14	0.92	6.86	20.67	8.67	232 48.8
60	19.22	14.77	0.90	8.23	20.63	8.65	232 17.1
70	19.24	14.30	0.87	9.60	20.56	8.63	231 45.4
80	19.18	13.77	0.84	10.98	20.51	8.61	231 13.7
90	19.07	13.24	0.81	12.35	20.45	8.58	230 42.0
100	18.90	12.77	0.78	13.72	20.39	8.56	230 10.3
110	18.68	12.38	0.76	15.09	20.34	8.53	229 38.6
120	18.42	12.12	0.74	16.47	20.29	8.51	229 6.9
130	18.16	11.99	0.73	17.84	20.24	8.49	228 35.3
140	17.91	12.00	0.73	19.21	20.19	8.47	228 3.6
150	17.69	12.13	0.74	20.59	20.16	8.46	227 31.9
160	17.51	12.35	0.76	21.96	20.13	8.45	227 0.2
170	17.39	12.62	0.77	23.33	20.11	8.44	226 28.5
180	17.33	12.90	0.79	24.70	20.11	8.44	225 56.8
190	17.32	13.14	0.80	26.07	20.10	8.44	225 25.1
200	17.37	13.32	0.81	27.44	20.12	8.44	224 53.4
210	17.45	13.38	0.82	28.81	20.14	8.45	224 21.7
220	17.56	13.32	0.81	30.19	20.17	8.46	223 50.0
230	17.66	13.12	0.80	31.56	20.20	8.48	223 18.4
240	17.78	12.79	0.78	32.93	20.24	8.50	222 46.7
250	17.80	12.34	0.75	34.31	20.29	8.52	222 15.0
260	17.80	11.82	0.72	35.68	20.35	8.54	221 43.3
270	17.74	11.27	0.69	37.05	20.41	8.56	221 11.6
280	17.62	10.74	0.66	38.42	20.47	8.59	220 39.9
290	17.44	10.27	0.63	39.79	20.53	8.61	220 8.2
300	17.21	9.90	0.60	41.16	20.59	8.64	219 36.5
310	16.95	9.68	0.59	42.54	20.64	8.66	219 4.8
320	16.69	9.62	0.59	43.91	20.69	8.68	218 33.1
330	16.45	9.71	0.59	45.28	20.73	8.70	218 1.5
340	16.25	9.93	0.61	46.65	20.76	8.71	217 29.8
350	16.10	10.24	0.63	48.02	20.78	8.72	216 58.1
360	16.03	10.58	0.65	49.40	20.79	8.72	216 26.4
370	16.02	+10.90	+0.67	50.77	-20.78	8.72	215 54.7

Mean Obliquity, 1864.0, ... 23° 27′ 24″.49

Precession for 1864.5, ... 50.2557

Log. Precession in a Sidereal Day, ... 9.13741

Log. Precession in a Solar Day, ... 9.13860

Daily Motion.

3′.169

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Jan. 1	−0.55881	+1.30234	+9.47238	+0.75775	Mar. 1	−1.25115	+0.80223	+9.66068	+0.71473
2	0.59635	1.30075	9.47740	0.75766	2	1.25355	0.77824	9.66242	0.71436
3	0.63077	1.29901	9.48233	0.75756	3	1.25581	0.75272	9.66415	0.71405
4	0.66253	1.29713	9.48717	0.75742	4	1.25793	0.72548	9.66586	0.71378
5	0.69201	1.29510	9.49193	0.75724	5	1.25990	0.69628	9.66754	0.71356
6	−0.71948	+1.29293	+9.49662	+0.75701	6	−1.26173	+0.66486	+9.66920	+0.71338
7	0.74518	1.29060	9.50125	0.75673	7	1.26341	0.63086	9.67084	0.71326
8	0.76932	1.28812	9.50580	0.75640	8	1.26496	0.59384	9.67247	0.71319
9	0.79205	1.28550	9.51027	0.75602	9	1.26638	0.55325	9.67408	0.71316
10	0.81352	1.28272	9.51467	0.75560	10	1.26765	0.50835	9.67567	0.71320
11	−0.83384	+1.27978	+9.51901	+0.75514	11	−1.26879	+0.45816	+9.67725	+0.71330
12	0.85312	1.27669	9.52327	0.75464	12	1.26980	0.40129	9.67881	0.71344
13	0.87145	1.27343	9.52746	0.75410	13	1.27067	0.33571	9.68035	0.71364
14	0.88890	1.27001	9.53157	0.75353	14	1.27140	0.25835	9.68188	0.71388
15	0.90554	1.26643	9.53562	0.75292	15	1.27201	0.16405	9.68341	0.71418
16	−0.92143	+1.26268	+9.53961	+0.75228	16	−1.27248	+0.04334	+9.68492	+0.71453
17	0.93662	1.25876	9.54352	0.75160	17	1.27283	9.87554	9.68643	0.71494
18	0.95116	1.25467	9.54736	0.75089	18	1.27304	9.59847	9.68793	0.71541
19	0.96510	1.25040	9.55113	0.75015	19	1.27312	+8.63024	9.68942	0.71594
20	0.97846	1.24595	9.55484	0.74938	20	1.27307	−9.49295	9.69090	0.71652
21	−0.99129	+1.24132	+9.55848	+0.74859	21	−1.27289	−9.82260	+9.69238	+0.71715
22	1.00362	1.23650	9.56207	0.74777	22	1.27258	0.00765	9.69387	0.71783
23	1.01548	1.23149	9.56559	0.74693	23	1.27214	0.13684	9.69534	0.71857
24	1.02688	1.22629	9.56906	0.74606	24	1.27157	0.23613	9.69681	0.71935
25	1.03785	1.22088	9.57246	0.74517	25	1.27087	0.31675	9.69828	0.72018
26	−1.04841	+1.21526	+9.57579	+0.74425	26	−1.27005	−0.38456	+9.69976	+0.72107
27	1.05859	1.20945	9.57905	0.74332	27	1.26909	0.44310	9.70123	0.72201
28	1.06841	1.20341	9.58226	0.74238	28	1.26800	0.49448	9.70271	0.72300
29	1.07787	1.19715	9.58541	0.74142	29	1.26677	0.54032	9.70418	0.72405
30	1.08699	1.19066	9.58850	0.74044	30	1.26542	0.58162	9.70566	0.72514
31	−1.09579	+1.18394	+9.59153	+0.73945	31	−1.26393	−0.61921	+9.70715	+0.72627
Feb. 1	1.10428	1.17697	9.59450	0.73846	Apr. 1	1.26231	0.65367	9.70864	0.72744
2	1.11247	1.16975	9.59743	0.73746	2	1.26056	0.68546	9.71013	0.72866
3	1.12037	1.16227	9.60030	0.73646	3	1.25867	0.71494	9.71163	0.72993
4	1.12800	1.15453	9.60312	0.73546	4	1.25665	0.74241	9.71312	0.73125
5	−1.13536	+1.14651	+9.60588	+0.73446	5	−1.25449	−0.76812	+9.71463	+0.73260
6	1.14246	1.13821	9.60858	0.73346	6	1.25219	0.79226	9.71615	0.73398
7	1.14932	1.12961	9.61123	0.73247	7	1.24975	0.81499	9.71767	0.73539
8	1.15593	1.12070	9.61384	0.73147	8	1.24717	0.83645	9.71921	0.73685
9	1.16230	1.11146	9.61640	0.73048	9	1.24445	0.85677	9.72076	0.73834
10	−1.16844	+1.10189	+9.61891	+0.72949	10	−1.24158	−0.87605	+9.72232	+0.73986
11	1.17437	1.09197	9.62138	0.72852	11	1.23857	0.89437	9.72389	0.74141
12	1.18008	1.08169	9.62380	0.72757	12	1.23542	0.91182	9.72547	0.74300
13	1.18558	1.07103	9.62617	0.72664	13	1.23211	0.92847	9.72706	0.74462
14	1.19087	1.05996	9.62849	0.72572	14	1.22866	0.94437	9.72865	0.74626
15	−1.19596	+1.04847	+9.63078	+0.72481	15	−1.22505	−0.95957	+9.73026	+0.74792
16	1.20086	1.03654	9.63303	0.72392	16	1.22128	0.97413	9.73188	0.74960
17	1.20557	1.02413	9.63524	0.72306	17	1.21736	0.98809	9.73352	0.75130
18	1.21009	1.01123	9.63741	0.72222	18	1.21328	1.00148	9.73517	0.75302
19	1.21443	0.99780	9.63954	0.72141	19	1.20903	1.01434	9.73683	0.75475
20	−1.21859	+0.98381	+9.64162	+0.72064	20	−1.20462	−1.02670	+9.73851	+0.75651
21	1.22258	0.96923	9.64367	0.71989	21	1.20004	1.03859	9.74020	0.75828
22	1.22640	0.95401	9.64569	0.71917	22	1.19528	1.05004	9.74191	0.76006
23	1.23005	0.93810	9.64767	0.71848	23	1.19035	1.06107	9.74362	0.76186
24	1.23354	0.92146	9.64961	0.71782	24	1.18524	1.07169	9.74535	0.76367
25	−1.23686	+0.90402	+9.65153	+0.71720	25	−1.17994	−1.08194	+9 74709	+0.76548
26	1.24003	0.88572	9.65342	0.71662	26	1.17446	1.09183	9.74885	0.76730
27	1.24304	0.86648	9.65528	0.71608	27	1.16878	1.10136	9.75062	0.76911
28	1.24590	0.84623	9.65711	0.71559	28	1.16289	1.11056	9.75240	0.77093
29	1.24860	0.82485	9.65891	0.71514	29	1.15681	1.11945	9.75420	0.77274
30	−1.25115	+0.80223	+9.66068	+0.71473	30	−1.15052	−1.12804	+9.75601	+0.77456
31	−1.25355	+0.77824	+9.66242	+0.71436	31	−1.14491	−1.13633	+9.75784	+0.77637

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
May 1	—1.14401	—1.13633	+9.75784	+0.77637	July 1	+0.53390	—1.30325	+9.87974	+0.84124
2	1.13727	1.14434	9.75968	0.77819	2	0.57118	1.30185	9.88159	0.84120
3	1.13031	1.15208	9.76152	0.78001	3	0.60539	1.30032	9.88343	0.84113
4	1.12311	1.15956	9.76339	0.78182	4	0.63700	1.29866	9.88527	0.84103
5	1.11567	1.16679	9.76527	0.78362	5	0.66635	1.29688	9.88708	0.84089
6	—1.10798	—1.17378	+9.76716	+0.78541	6	+0.69373	—1.29498	+9.88888	+0.84072
7	1.10002	1.18053	9.76906	0.78718	7	0.71937	1.29294	9.89067	0.84052
8	1.09180	1.18705	9.77097	0.78894	8	0.74346	1.29077	9.89243	0.84029
9	1.08329	1.19335	9.77289	0.79069	9	0.76617	1.28847	9.89418	0.84002
10	1.07449	1.19943	9.77483	0.79242	10	0.78765	1.28603	9.89592	0.83972
11	—1.06539	—1.20531	+9.77678	+0.79413	11	+0.80800	—1.28346	+9.89764	+0.83939
12	1.05598	1.21099	9.77874	0.79583	12	0.82732	1.28076	9.89934	0.83903
13	1.04623	1.21646	9.78071	0.79752	13	0.84570	1.27792	9.90103	0.83864
14	1.03614	1 22174	9.78269	0.79919	14	0.86322	1.27494	9.90270	0.83822
15	1.02569	1.22684	9.78468	0.80084	15	0.87995	1.27181	9.90434	0.83777
16	—1.01486	—1.23176	+9.78668	+0.80247	16	+0.89594	—1.26854	+9.90597	+0.83730
17	1.00363	1.23650	9.78869	0.80406	17	0.91125	1.26512	9.90758	0.83680
18	0.99199	1.24106	9.79071	0.80562	18	0.92592	1.26156	9.90918	0.83627
19	0.97990	1.24545	9.79273	0.80716	19	0.94000	1.25784	9.91076	0.83572
20	0.96735	1.24968	9.79476	0.80868	20	0.95353	1.25397	9.91232	0.83514
21	—0.95430	—1.25374	+9.79681	+0.81017	21	+0.96653	—1.24994	+9.91387	+0.83455
22	0.94073	1.25764	9.79885	0.81164	22	0.97903	1.24575	9.91540	0.83395
23	0.92660	1.26139	9.80090	0.81308	23	0.99107	1.24140	9.91691	0.83332
24	0.91187	1.26498	9.80295	0.81449	24	1.00268	1.23688	9.91840	0.83267
25	0.89650	1.26842	9.80501	0.81587	25	1.01387	1.23219	9.91987	0.83200
26	—0.88045	—1.27171	+9.80707	+0.81721	26	+1.02466	—1.22733	+9.92132	+0.83131
27	0.86365	1.27486	9.80914	0.81852	27	1.03507	1.22229	9.92275	0.83061
28	0.84606	1.27786	9.81122	0.81979	28	1.04513	1.21706	9.92417	0.82989
29	0.82761	1.28072	9.81329	0.82104	29	1.05485	1.21164	9.92557	0.82915
30	0.80821	1.28344	9.81537	0.82226	30	1.06423	1.20603	9.92695	0.82840
31	—0.78778	—1.28602	+9.81745	+0.82345	31	+1.07330	—1.20023	+9.92831	+0.82764
June 1	0.76622	1.28846	9.81952	0.82459	Aug. 1	1.08207	1.19422	9.92966	0.82688
2	0.74341	1.29077	9.82160	0.82569	2	1.09055	1.18800	9.93099	0.82611
3	0.71921	1.29295	9.82368	0.82675	3	1.09875	1.18157	9.93230	0.82534
4	0.69347	1.29500	9.82576	0.82778	4	1.10668	1.17492	9.93359	0.82454
5	—0.66599	—1.29691	+9.82783	+0.82878	5	+1.11435	—1.16803	+9.93486	+0.82375
6	0.63652	1.29869	9.82990	0.82975	6	1.12177	1.16091	9.93611	0.82295
7	0.60478	1.30035	9.83197	0.83067	7	1.12895	1.15354	9.93735	0.82214
8	0.57042	1.30188	9.83404	0.83155	8	1.13589	1.14592	9.93858	0.82134
9	0.53299	1.30328	9.83611	0.83240	9	1.14261	1.13804	9.93978	0.82053
10	—0.49190	—1.30456	+9.83817	+0.83321	10	+1.14910	—1.12989	+9.94096	+0.81973
11	0.44640	1.30571	9.84023	0.83398	11	1.15538	1.12145	9.94213	0.81894
12	0.39544	1.30674	9.84228	0.83472	12	1.16146	1.11271	9.94328	0.81815
13	0.33757	1.30765	9.84433	0.83541	13	1.16733	1.10368	9.94441	0.81737
14	0.27066	1.30843	9.84637	0.83606	14	1.17300	1.09433	9.94553	0.81659
15	—0.19142	—1.30909	+9.84841	+0.83667	15	+1.17848	—1.08464	+9.94663	+0.81582
16	0.09428	1.30963	9.85044	0.83724	16	1.18378	1.07460	9.94771	0.81507
17	9.96884	1.31005	9.85246	0.83777	17	1.18889	1.06420	9.94878	0.81431
18	9.79158	1.31035	9.85447	0.83827	18	1.19382	1.05341	9.94983	0.81357
19	—9.48635	1.31053	9.85648	0.83873	19	1.19857	1.04221	9.95087	0.81285
20	+7.72435	—1.31059	+9.85848	+0.83915	20	+1.20316	—1.03058	+9.95190	+0.81215
21	9.50158	1.31053	9.86046	0.83953	21	1.20758	1.01850	9.95291	0.81146
22	9.79890	1.31035	9.86244	0.83987	22	1.21184	1.00595	9.95390	0.81079
23	9.97366	1.31004	9.86441	0.84017	23	1.21594	0.99289	9 95488	0.81014
24	0.09784	1.30961	9.86637	0.84044	24	1.21987	0.97929	9.95585	0.80950
25	+0.19420	—1.30907	+9.86832	+0.84067	25	+1.22365	—0.96511	+9.95680	+0.80889
26	0.27291	1.30841	9.87025	0.84086	26	1.22728	0.95031	9.95774	0.80831
27	0.33942	1.30762	9.87217	0.84102	27	1.23076	0.93486	9.95867	0.80775
28	0.39697	1.30671	9.87409	0.84113	28	1.23409	0.91871	9.95959	0.80722
29	0.44769	1.30568	9.87599	0.84120	29	1.23727	0.90179	9.96050	0.80672
30	+0.49300	—1.30453	+9.87787	+0.84124	30	+1.24030	—0.88405	+9.96139	+0.80624
31	+0.53390	—1.30325	+9.87974	+0.84124	31	+1.24320	—0.86541	+9.96227	+0.80579

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Sept. 1	+1.24595	—0.84579	+9.96314	+0.80537	Nov. 1	+1.15693	+1.11929	+0.01289	+0.84965
2	1.24856	0.82511	9.96400	0.80498	2	1.15042	1.12817	0.01389	0.85116
3	1.25104	0.80325	9.96485	0.80463	3	1.14367	1.13674	0.01491	0.85268
4	1.25338	0.78009	9.96570	0.80431	4	1.13668	1.14502	0.01593	0.85420
5	1.25558	0.75548	9.96653	0.80402	5	1.12944	1.15302	0.01697	0.85571
6	+1.25765	—0.72926	+9.96735	+0.80376	6	+1.12193	+1.16075	+0.01801	+0.85722
7	1.25959	0.70120	9.96815	0.80355	7	1.11415	1.16821	0.01907	0.85872
8	1.26139	0.67105	9.96896	0.80338	8	1.10609	1.17542	0.02014	0.86021
9	1.26306	0.63849	9.96976	0.80324	9	1.09774	1.18238	0.02121	0.86170
10	1.26460	0.60315	9.97055	0.80314	10	1.08909	1.18911	0.02230	0.86317
11	+1.26601	—0.56453	+9.97135	+0.80307	11	+1.08012	+1.19560	+0.02340	+0.86464
12	1.26729	0.52196	9.97213	0.80305	12	1.07081	1.20186	0.02451	0.86609
13	1.26844	0.47460	9.97290	0.80307	13	1.06116	1.20791	0.02563	0.86753
14	1.26947	0.42127	9.97367	0.80313	14	1.05115	1.21374	0.02676	0.86896
15	1.27037	0.36027	9.97443	0.80324	15	1.04077	1.21937	0.02790	0.87037
16	+1.27114	—0.28911	+9.97519	+0.80339	16	+1.02999	+1.22479	+0.02905	+0.87177
17	1.27179	0.20374	9.97595	0.80358	17	1.01879	1.23002	0.03020	0.87315
18	1.27231	0.09715	9.97669	0.80381	18	1.00715	1.23505	0.03137	0.87450
19	1.27270	9.95531	9.97744	0.80409	19	0.99504	1.23990	0.03254	0.87583
20	1.27296	9.74292	9.97819	0.80440	20	0.98244	1.24456	0.03372	0.87714
21	+1.27310	—9.30939	+9.97893	+0.80476	21	+0.96932	+1.24904	+0.03491	+0.87842
22	1.27311	+9.16360	9.97968	0.80516	22	0.95564	1.25334	0.03611	0.87968
23	1.27299	9.69511	9.98042	0.80559	23	0.94137	1.25746	0.03732	0.88092
24	1.27275	9.92710	9.98116	0.80607	24	0.92647	1.26142	0.03853	0.88214
25	1.27238	0.07750	9.98190	0.80662	25	0.91090	1.26520	0.03974	0.88334
26	+1.27188	+0.18896	+9.98265	+0.80720	26	+0.89459	+1.26882	+0.04096	+0.88451
27	1.27125	0.27753	9.98339	0.80782	27	0.87750	1.27228	0.04220	0.88564
28	1.27049	0.35099	9.98414	0.80848	28	0.85957	1.27558	0.04344	0.88674
29	1.26960	0.41373	9.98488	0.80918	29	0.84072	1.27872	0.04468	0.88781
30	1.26858	0.46845	9.98563	0.80992	30	0.82086	1.28170	0.04593	0.88885
31	+1.26743	+0.51697	+9.98638	+0.81069	31	+0.79990	+1.28452	+0.04719	+0.88986
Oct. 1	1.26743	0.51697	9.98638	0.81069	Dec. 1	0.79990	1.28452	0.04719	0.88986
2	1.26615	0.56050	9.98713	0.81151	2	0.77772	1.28719	0.04845	0.89083
3	1.26473	0.59997	9.98789	0.81237	3	0.75420	1.28971	0.04971	0.89178
4	1.26318	0.63604	9.98865	0.81327	4	0.72920	1.29208	0.05098	0.89269
5	+1.26149	+0.66926	+9.98942	+0.81421	5	+0.70253	+1.29430	+0.05224	+0.89356
6	1.25966	0.70000	9.99019	0.81519	6	0.67394	1.29638	0.05351	0.89440
7	1.25769	0.72860	9.99096	0.81619	7	0.64317	1.29831	0.05478	0.89522
8	1.25559	0.75532	9.99174	0.81722	8	0.60991	1.30010	0.05606	0.89599
9	1.25335	0.78039	9.99253	0.81830	9	0.57374	1.30174	0.05734	0.89672
10	+1.25096	+0.80398	+9.99332	+0.81942	10	+0.53413	+1.30324	+0.05862	+0.89742
11	1.24843	0.82624	9.99412	0.82056	11	0.49038	1.30460	0.05990	0.89808
12	1.24575	0.84730	9.99493	0.82173	12	0.44155	1.30582	0.06117	0.89870
13	1.24292	0.86727	9.99574	0.82293	13	0.38636	1.30690	0.06245	0.89928
14	1.23994	0.88625	9.99657	0.82416	14	0.32297	1.30784	0.06373	0.89982
15	+1.23681	+0.90432	+9.99740	+0.82541	15	+0.24853	+1.30864	+0.06501	+0.90033
16	1.23352	0.92156	9.99823	0.82669	16	0.15846	1.30930	0.06629	0.90080
17	1.23007	0.93802	9.99907	0.82800	17	0.04446	1.30983	0.06756	0.90123
18	1.22646	0.95376	9.99992	0.82934	18	9.88923	1.31022	0.06883	0.90162
19	1.22269	0.96883	0.00078	0.83069	19	9.64508	1.31047	0.07009	0.90198
20	+1.21875	+0.98328	+0.00166	+0.83206	20	+9.03424	+1.31058	+0.07134	+0.90230
21	1.21464	0.99715	0.00254	0.83346	21	—9.35284	1.31056	0.07260	0.90258
22	1.21035	1.01047	0.00342	0.83488	22	9.74731	1.31040	0.07388	0.90282
23	1.20588	1.02327	0.00431	0.83631	23	9.95050	1.31010	0.07515	0.90302
24	1.20123	1.03558	0.00523	0.83775	24	0.08828	1.30966	0.07639	0.90318
25	+1.19640	+1.04743	+0.00616	+0.83920	25	—0.19265	+1.30908	+0.07764	+0.90330
26	1.19138	1.05885	0.00709	0.84066	26	0.27660	1.30837	0.07888	0.90339
27	1.18616	1.06985	0.00803	0.84215	27	0.34684	1.30752	0.08011	0.90343
28	1.18073	1.08046	0.00899	0.84363	28	0.40715	1.30653	0.08134	0.90344
29	1.17510	1.09069	0.00995	0.84513	29	0.45997	1.30539	0.08256	0.90341
30	+1.16926	+1.10056	+0.01092	+0.84664	30	—0.50695	+1.30411	+0.08377	+0.90335
31	+1.16321	+1.11069	+0.01190	+0.84815	31	—0.54920	+1.30270	+0.08498	+0.90325

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1864.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	τ.
Jan. 1	+13″.67	0.9169	43° 53′	1.3093	349° 46′	−0.1963	0.000
6	14.46	0.9295	42 15	1.3079	345 3	0.3569	0.014
11	15.22	0.9412	40 39	1.3060	340 18	0.4713	0.027
16	15.96	0.9521	39 8	1.3037	335 30	0.5589	0.041
21	16.67	0.9623	37 41	1.3010	330 39	0.6287	0.055
26	+17.35	0.9718	36 19	1.2980	325 45	−0.6859	0.068
31	17.99	0.9806	35 2	1.2948	320 47	0.7332	0.082
Feb 5	18.59	0.9887	33 50	1.2915	315 44	0.7728	0.096
10	19.16	0.9963	32 45	1.2882	310 38	0.8059	0.110
15	19.69	1.0035	31 46	1.2850	305 27	0.8334	0.123
20	+20.19	1.0103	30 53	1.2820	300 13	−0.8560	0.137
25	20.65	1.0167	30 7	1.2793	294 55	0.8743	0.151
Mar. 1	21.09	1.0230	29 27	1.2770	289 35	0.8886	0.164
6	21.51	1.0292	28 54	1.2752	284 12	0.8992	0.178
11	21.91	1.0354	28 27	1.2739	278 47	0.9062	0.192
16	+22.31	1.0416	28 6	1.2732	273 23	−0.9099	0.205
21	22.69	1.0480	27 50	1.2731	267 58	0.9103	0.219
26	23.08	1.0546	27 38	1.2737	262 35	0.9075	0.233
31	23.48	1.0615	27 31	1.2748	257 14	0.9014	0.246
April 5	23.88	1.0688	27 28	1.2765	251 56	0.8919	0.260
10	+24.31	1.0764	27 26	1.2786	246 41	−0.8790	0.274
15	24.76	1.0843	27 27	1.2811	241 31	0.8625	0.287
20	25.23	1.0926	27 28	1.2839	236 25	0.8421	0.301
25	25.73	1.1013	27 29	1.2869	231 25	0.8174	0.315
30	26.27	1.1103	27 29	1.2900	226 29	0.7880	0.328
May 5	+26.84	1.1195	27 29	1.2932	221 38	−0.7531	0.342
10	27.44	1.1289	27 26	1.2964	216 52	0 7119	0.356
15	28.06	1.1385	27 21	1.2994	212 11	0.6631	0.370
20	28.72	1.1481	27 14	1.3020	207 34	0.6048	0.383
25	29.41	1.1577	27 5	1.3044	203 1	0.5339	0.397
30	+30.12	1.1672	26 52	1.3065	198 31	−0.4457	0.411
June 4	30.85	1.1766	26 36	1.3082	194 3	0.3309	0.424
9	31.59	1.1858	26 18	1.3094	189 38	0.1704	0.438
14	32.35	1.1948	25 58	1.3102	185 14	−9.9081	0.452
19	33.11	1.2035	25 35	1.3106	180 52	−9.1243	0.465
24	+33.87	1.2119	25 10	1.3105	176 29	+9.7353	0.479
29	34.63	1.2199	24 43	1.3098	172 6	0.0851	0.493
July 4	35.38	1.2276	24 15	1.3087	167 42	0.2744	0.506
9	36.11	1.2349	23 45	1.3072	163 17	0.4036	0.520
14	36.83	1.2417	23 16	1.3053	158 49	0.5007	0.534
19	+37.52	1.2482	22 45	1.3030	154 19	+0.5774	0.548
24	38.18	1.2543	22 16	1.3004	149 45	0.6401	0.561
29	38.82	1.2599	21 46	1.2976	145 7	0.6923	0.575
Aug. 3	39.43	1.2652	21 18	1.2946	140 26	0.7362	0.589
8	40.00	1.2702	20 50	1.2915	135 40	0.7733	0.602
13	+40.54	1.2748	20 25	1.2883	130 49	+0.8048	0.616
18	41.05	1.2791	20 1	1.2853	125 54	0.8313	0.630
23	41.53	1.2832	19 40	1.2824	120 54	0.8534	0.643
28	41.98	1.2871	19 21	1.2797	115 49	0.8715	0.657
Sept. 2	42.41	1.2907	19 4	1.2774	110 40	0.8860	0.671
7	+42.82	1.2943	18 51	1.2756	105 27	+0.8970	0.684
12	43 21	1.2978	18 40	1.2742	100 11	0.9047	0.698
17	43.59	1.3013	18 32	1.2734	94 53	0.9092	0.712
22	43.97	1.3048	18 27	1.2731	89 33	0.9106	0.725
27	44.35	1.3084	18 24	1.2735	84 12	0.9087	0.739
Oct. 2	+44.73	1.3122	18 24	1.2744	78 51	+0.9036	0.753
7	45.13	1.3161	18 26	1.2759	73 31	0.8951	0.767
12	+45.54	1.3202	18 30	1.2779	68 13	+0.8832	0.780

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1864.	*f*.	Log *g*.	G.	Log *h*.	H.	Log *i*.	τ.
Oct. 17	+45″.98	1.3246	18° 35′	1.2803	62° 57′	+0.8675	0.794
22	46.44	1.3292	18 41	1.2832	57 45	0.8478	0.808
27	46.93	1.3341	18 48	1.2862	52 35	0.8236	0.821
Nov. 1	47.46	1.3392	18 54	1.2894	47 29	0.7944	0.835
6	48.03	1.3446	18 60	1.2927	42 27	0.7594	0.849
11	+48.63	1.3502	19 5	1.2960	37 28	+0.7176	0.862
16	49.27	1.3559	19 9	1.2990	32 33	0.6674	0.876
21	49.93	1.3619	19 11	1.3019	27 42	0.6068	0.890
26	50.63	1.3680	19 11	1.3045	22 54	0.5320	0.903
Dec. 1	51.37	1.3741	19 8	1.3067	18 8	0.4374	0.917
6	+52.12	1.3803	19 4	1.3084	13 25	+0.3114	0.931
11	52.89	1.3864	18 57	1.3096	8 43	0.1278	0.945
16	53.68	1.3924	18 49	1.3104	4 3	+9.7959	0.958
21	54.48	1.3983	18 38	1.3106	359 22	−8.9903	0.972
26	55.27	1.4039	18 25	1.3102	354 41	9.9140	0.986
31	+56.04	1.4094	18 10	1.3093	350 0	−0.1866	0.999

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND THE NOTATION OF THE CATALOGUE OF STARS OF THE BRITISH ASSOCIATION.

$A = -20''.4451 \cos \omega \cos \odot.$

$B = -20''.4451 \sin \odot.$

$$C = \tau - 0.34238 \sin \text{☊} + 0.00410 \sin 2\text{☊} - 0.02519 \sin 2\odot.$$
$$+ 0.00294 \sin (\odot + 82^\circ\ 34') - 0.00405 \sin 2\text{☾} + 0.00135 \sin (\text{☾} - \Gamma').$$

$$D = -9''.2236 \cos \text{☊} + 0''.0896 \cos 2\text{☊} - 0''.5507 \cos 2\odot - 0''.0092 \cos (\odot + 280^\circ\ 22')$$
$$- 0''.0885 \cos 2\text{☾}.$$

$E = -0''.0481 \sin \text{☊} + 0''.0014 \sin 2\text{☊} - 0''.0034 \sin 2\odot.$

$a = \cos \alpha \sec \delta.$
$b = \sin \alpha \sec \delta.$
$c = 46''.0780 + 20''.0560 \sin \alpha \tan \delta.$
$d = \cos \alpha \tan \delta.$

$a' = \tan \omega \cos \delta - \sin \alpha \sin \delta.$
$b' = \cos \alpha \sin \delta.$
$c' = 20''.0560 \cos \alpha.$
$d' = - \sin \alpha.$

μ = the annual proper motion in right ascension.
μ' = the annual proper motion in declination.

τ = the time from the beginning of the year in fractional parts of the year.
$\odot$ = the sun's longitude.
☾ = the moon's longitude.
☊ = the longitude of the moon's ascending node.
ω = the obliquity of the ecliptic.
α = the star's mean right ascension for the beginning of the year.
δ = the star's mean declination for the beginning of the year.
α' = the star's apparent right ascension at the time τ.
δ' = the star's apparent declination at the time τ.

$\alpha' - \alpha = A a + B b + C c + D d + E + \tau \mu.$
$\delta' - \delta = A a' + B b' + C c' + D d' + \tau \mu'.$

The following formulæ may also be used by putting

$f = 46''.0780\ C.$ $\qquad i = A \tan \omega.$
$g \cos G = 20''.0560\ C.$ $\qquad h \cos H = B.$
$g \sin G = D.$ $\qquad h \sin H = A.$

$\alpha' - \alpha = f + \tau \mu + g \sin (G + \alpha) \tan \delta + h \sin (H + \alpha) \sec \delta.$
$\delta' - \delta = i \cos \delta + \tau \mu' + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta.$

MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR JANUARY 1, 1864.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ' "	"
α ANDROMEDÆ	2	0 1 21.75	+ 3.085	+28 20 22.4	+19.91
γ PEGASI (*Algenib*)	3.2	0 6 14.09	3.080	+14 25 38.0	20.03
β Hydræ	3	0 18 33.20	3.283	—78 1 16.0	20.24
α CASSIOPEÆ	var.	0 32 48.52	3.358	+55 47 27.6	19.83
β Ceti	2	0 36 45.62	3.016	—18 44 1.7	19.82
α URS. MIN. (*Polaris*)	2	1 9 18.48	+19.327	+88 35 4.0	+19.14
θ¹ Ceti	3	1 17 13.60	3.000	— 8 53 10.1	18.74
α Eridani (*Achernar*)	1	1 32 38.62	2.238	—57 55 42.1	18.45
α ARIETIS	2	1 59 30.74	3.365	+22 49 3.7	17.25
γ Ceti	3.4	2 36 15.34	3.102	+ 2 39 38.3	15.38
α CETI	2.3	2 55 10.31	+ 3.127	+ 3 33 13.4	+14.37
α PERSEI	2	3 14 37.70	4.246	+49 22 26.1	13.21
η Tauri	3	3 39 24.26	3.554	+23 40 54.8	11.51
γ¹ Eridani	3	3 51 41.06	2.796	—13 53 52.0	10.56
α TAURI (*Aldebaran*)	1	4 28 7.19	3.435	+16 13 58.6	7.66
α AURIGÆ (*Capella*)	1	5 6 38.86	+ 4.423	+45 51 20.2	+ 4.21
β ORIONIS (*Rigel*)	1	5 8 0.15	2.880	— 8 21 42.3	4.49
β TAURI	2	5 17 41.78	3.788	+28 29 19.4	3.48
δ ORIONIS	2	5 25 3.62	3.066	— 0 24 10.3	3.02
α Leporis	3	5 26 44.01	2.648	—17 55 19.7	2.91
ε ORIONIS	2	5 29 18.80	+ 3.044	— 1 17 30.0	+ 2.68
α Columbæ	2	5 34 43.64	2.177	—34 8 53.4	2.20
α ORIONIS	var.	5 47 48.55	3.246	+ 7 22 42.3	+ 1.06
μ Geminorum	3	6 14 44.00	3.636	+22 34 47.4	— 1.42
α Argus (*Canopus*)	1	6 20 56.10	1.330	—52 37 20.9	1.82
51 (Hev.) Cephei	5	6 35 40.30	+30.400	+87 14 41.5	— 3.18
α CANIS MAJ. (*Sirius*)	1	6 39 9.45	2.646	—16 31 54.3	4.62
ε Canis Majoris	2.1	6 53 16.90	2.360	—28 47 22.1	4.63
δ Geminorum	3.4	7 12 0.00	3.597	+22 13 46.3	6.20
α² GEMINOR. (*Castor*)	2.1	7 25 54.82	3.840	+32 10 58.7	7.43
α CAN. MIN. (*Procyon*)	1	7 32 10.86	+ 3.146	+ 5 34 16.0	— 8.89
β GEMINOR. (*Pollux*)	1.2	7 36 59.38	3.682	+28 21 5.1	8.31
15 Argus	3	8 1 45.18	2.558	—23 54 51.3	10.08
ε Hydræ	3.4	8 39 34.39	3.189	+ 6 54 56.5	12.88
ι Ursæ Majoris	3	8 49 52.77	4.141	+48 34 22.6	13.81
ι Argus	2	9 13 26.92	+ 1.602	—58 42 17.4	—14.90
α HYDRÆ	2	9 20 54.19	2.948	— 8 4 15.7	15.39
θ Ursæ Majoris	3	9 23 44.47	4.056	+52 17 41.2	16.13
ε Leonis	3	9 38 7.62	3.423	+24 23 55.6	16.36
α LEONIS (*Regulus*)	1.2	10 1 7.55	3.203	+12 37 49.6	17.42
η Argus	2	10 39 47.50	+ 2.306	—58 58 10.1	—18.73
α URSÆ MAJORIS	2	10 55 18.54	3.772	+62 29 3.4	19.34
δ LEONIS	2.3	11 6 52.34	3.207	+21 16 6.0	19.65
δ Hydræ et Crateris	3.4	11 12 32.57	+ 2.997	—14 2 35.2	—19.45

MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR JANUARY 1, 1864.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
β LEONIS	2	11 42 7.20	+ 3.065	+15 19 55.9	—20.10
γ URSÆ MAJORIS . .	2.3	11 46 39.75	3.192	+54 27 2.8	20.04
β Chamæleontis . . .	5	12 10 25.93	3.328	—78 33 25.7	20.05
α^1 Crucis	1	12 19 3.13	3.261	—62 20 39.6	19.94
β Corvi	2.3	12 27 14.74	3.133	—22 38 39.5	19.99
12 Canum Venaticorum	3	12 49 39.62	+ 2.822	+39 3 12.5	—19.56
α VIRGINIS (*Spica*) .	1	13 18 1.86	3.150	—10 27 2.6	18.95
η URSÆ MAJORIS . .	2	13 42 10.66	2.371	+49 59 34.7	18.14
η Bootis	3	13 48 12.58	2.862	+19 4 50.8	18.22
β Centauri	1	13 54 15.29	4.156	—59 42 53.8	17.71
α BOOTIS (*Arcturus*) .	1	14 9 27.50	+ 2.733	+19 53 30.9	—18.92
α^2 Centauri	1	14 30 24.10	4.031	—60 16 9.1	15.06
ε BOOTIS	2.3	14 39 2.81	2.622	+27 38 56.8	15.43
α^2 LIBRÆ	3	14 43 21.53	+ 3.305	—15 28 28.5	15.24
β URSÆ MINORIS . .	2	14 51 8.15	— 0.256	+74 42 39.5	14.78
β Libræ	2	15 9 41.49	+ 3.220	— 8 52 43.5	—13.58
α CORONÆ BOREALIS	2	15 28 55.81	2.538	+27 10 27.7	12.36
α SERPENTIS . . .	2.3	15 37 34.20	+ 2.949	+ 6 51 20.1	11.63
ζ Ursæ Minoris . . .	4.5	15 48 59.20	— 2.301	+78 12 40.6	10.85
β^1 Scorpii	2	15 57 31.98	+ 3.479	—19 25 49.3	10.25
δ OPHIUCHI	3	16 7 13.21	+ 3.138	— 3 20 29.1	— 9.61
α SCORPII (*Antares*) .	1.2	16 21 4.35	3.666	—26 7 38.1	8.43
η Draconis	3.2	16 22 9.83	0.822	+61 49 22.3	8.22
α Trianguli Australis .	2	16 34 17.88	+ 6.276	—68 46 19.9	7.42
ε Ursæ Minoris . . .	4.5	17 0 1.35	— 6.414	+82 15 20.4	5.18
α HERCULIS	var.	17 8 26.79	+ 2.732	+14 32 51.9	— 4.44
β DRACONIS	3.2	17 27 21.64	1.353	+52 24 11.9	2.84
α OPHIUCHI	2	17 28 37.31	2.781	+12 39 42.0	2.95
γ DRACONIS . . .	2.3	17 53 26.94	1.394	+51 30 21.7	— 0.60
σ Octantis	6	17 55 27.49	110.398	—89 16 43.2	— 0.30
μ^1 Sagittarii	4	18 5 37.71	+ 3.587	—21 5 27.9	+ 0.50
δ URSÆ MINORIS . .	4.5	18 16 13.00	—19.369	+86 36 12.9	1.43
α LYRÆ (*Vega*) . .	1	18 32 20.03	+ 2.031	+38 39 31.6	3.10
β LYRÆ	var.	18 45 3.48	2.215	+33 12 23.9	3.89
ζ AQUILÆ	3	18 59 9.44	2.755	+13 39 50.4	5.06
δ AQUILÆ	3.4	19 18 38.40	+ 3.027	+ 2 50 46.8	+ 6.85
γ AQUILÆ	3	19 39 47.59	2.852	+10 17 2.9	8.46
α AQUILÆ (*Altair*) .	1.2	19 44 8.82	2.928	+ 8 30 41.2	9.18
β AQUILÆ	4	19 48 37.90	+ 2.947	+ 6 4 9.2	8.67
λ Ursæ Minoris . . .	5	20 0 6.81	—57.503	+88 54 5.3	10.01
α^2 CAPRICORNI . . .	3.4	20 10 30.34	+ 3.333	—12 57 51.2	+10.81
α Pavonis	2	20 14 52.40	4.800	—57 10 0.3	11.09
α CYGNI	2.1	20 36 47.74	2.043	+44 47 44.3	12.67
61^1 CYGNI	5.6	21 0 47.94	+ 2.676	+38 4 56.6	+17.48

MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR JANUARY 1, 1864.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ′ ″	″
ζ Cygni	3	21 7 8.88	+ 2.550	+29 40 14.2	+14.55
α CEPHEI	3.2	21 15 19.84	1.439	+62 0 35.8	15.11
β AQUARII	3	21 24 23.76	3.163	— 6 10 3.3	15.63
β CEPHEI	3	21 26 53.58	0.802	+69 57 50.0	15.69
ε Pegasi	2.3	21 37 30.39	2.951	+ 9 15 11.0	16.32
α AQUARII	3	21 58 47.81	+ 3.083	— 0 58 46.0	+17.30
α Gruis	2	21 59 38.78	3.820	—47 37 3.1	17.16
ζ Pegasi	3.4	22 34 40.62	2.990	+10 7 21.1	18.69
α PIS. AUS. (*Fomalhaut*)	1.2	22 50 7.70	3.330	—30 20 34.7	18.94
α PEGASI (*Markab*) .	2	22 57 59.28	2.983	+14 28 27.5	19.31
ι Piscium	4.5	23 32 57.37	+ 3.084	+ 4 53 22.3	+19.47
γ Cephei	3.4	23 33 47.48	+ 2.397	+76 52 24.5	+20.08

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*,) FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	$1^{h}\ 9^{m}$	$88^{\circ}\ 35'$	$1^{h}\ 8^{m}$	$88^{\circ}\ 35'$	$1^{h}\ 8^{m}$	$88^{\circ}\ 35'$	$1^{h}\ 8^{m}$	$88^{\circ}\ 35'$	
1	$45^{s}.65$	$28''.15$	$79^{s}.69$	$27''.86$	$60^{s}.16$	$22''.46$	$51^{s}.44$	$13''.40$	1
2	44.83	28.20	79.01	27.77	59.71	22.24	51.31	13.09	2
3	44.06	28.26	78.30	27.68	59.22	22.02	51.17	12.76	3
4	43.33	28.31	77.56	27.59	58.69	21.79	51.09	12.41	4
5	42.59	28.38	76.76	27.50	58.13	21.54	51.07	12.05	5
6	41.84	28.47	75.90	27.40	57.57	21.26	51.14	11.70	6
7	41.06	28.57	75.00	27.27	57.02	20.95	51.28	11.36	7
8	40.24	28.66	74.11	27.11	56.52	20.64	51.45	11.03	8
9	39.34	28.75	73.27	26.92	56.09	20.32	51.64	10.72	9
10	38.38	28.81	72.49	26.73	55.74	20.00	51.84	10.43	10
11	37.39	28.84	71.78	26.52	55.44	19.69	52.04	10.15	11
12	36.42	28.85	71.12	26.32	55.19	19.40	52.22	9.88	12
13	35.49	28.84	70.50	26.13	54.96	19.12	52.36	9.60	13
14	34.61	28.80	69.91	25.96	54.72	18.86	52.49	9.31	14
15	33.79	28.78	69.31	25.80	54.44	18.59	52.59	9.01	15
16	33.01	28.76	68.68	25.64	54.14	18.33	52.69	8.70	16
17	32.26	28.74	68.03	25.47	53.81	18.05	52.82	8.38	17
18	31.51	28.75	67.36	25.31	53.47	17.78	52.98	8.05	18
19	30.74	28.75	66.66	25.13	53.11	17.48	53.20	7.72	19
20	29.94	28.75	65.94	24.94	52.78	17.16	53.48	7.39	20
21	29.11	28.74	65.22	24.72	52.47	16.83	53.82	7.06	21
22	28.24	28.73	64.49	24.49	52.21	16.50	54.21	6.74	22
23	27.33	28.71	63.80	24.25	51.99	16.15	54.63	6.45	23
24	26.39	28.67	63.15	23.99	51.84	15.81	55.08	6.18	24
25	25.46	28.61	62.53	23.72	51.75	15.46	55.51	5.92	25
26	24.53	28.53	61.98	23.45	51.70	15.13	55.93	5.68	26
27	23.62	28.42	61.48	23.19	51.70	14.83	56.30	5.43	27
28	22.75	28.31	61.03	22.94	51.70	14.53	56.62	5.18	28
29	21.93	28.19	60.60	22.70	51.69	14.24	56.92	4.91	29
30	21.15	28.07	60.16	22.46	51.66	13.98	57.23	4.63	30
31	20.41	27.96	59.71	22.24	51.57	13.69	57.55	4.33	31
32	19.69	27.86	59.22	22.02	51.44	13.40	57.93	4.02	32

APPARENT PLACES OF *α* URSÆ MINORIS, (*Polaris,*) FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	MAY.		JUNE.		JULY.		AUGUST.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h m 1 8	° ′ 88 34	h m 1 9	° ′ 88 34	h m 1 9	° ′ 88 34	h m 1 10	° ′ 88 34	
	s	″	s	″	s	″	s	″	
1	57.55	64.33	17.07	57.82	43.12	56.22	10.32	59.79	1
2	57.93	64.02	17.95	57.69	44.08	56.29	11.07	60.01	2
3	58.37	63.72	18.87	57.56	45.00	56.37	11.79	60.21	3
4	58.90	63.43	19.75	57.46	45.90	56.43	12.49	60.40	4
5	59.48	63.16	20.62	57.37	46.74	56.50	13.18	60.58	5
6	60.11	62.91	21.45	57.29	47.56	56.57	13.90	60.76	6
7	60.74	62.68	22.23	57.21	48.36	56.62	14.66	60.95	7
8	61.35	62.47	22.98	57.13	49.16	56.67	15.46	61.14	8
9	61.94	62.27	23.73	57.05	49.98	56.71	16.30	61.34	9
10	62.48	62.06	24.46	56.96	50.84	56.76	17.18	61.56	10
11	63.00	61.84	25.21	56.86	51.73	56.82	18.04	61.80	11
12	63.48	61.63	25.98	56.75	52.68	56.87	18.91	62.06	12
13	63.98	61.41	26.79	56.64	53.64	56.94	19.73	62.34	13
14	64.47	61.18	27.66	56.54	54.63	57.03	20.51	62.62	14
15	65.01	60.93	28.58	56.44	55.63	57.16	21.20	62.90	15
16	65.59	60.68	29.53	56.38	56.61	57.29	21.82	63.17	16
17	66.22	60.44	30.52	56.33	57.56	57.45	22.41	63.43	17
18	66.90	60.21	31.50	56.31	58.45	57.60	23.00	63.66	18
19	67.62	59.98	32.45	56.30	59.27	57.75	23.59	63.88	19
20	68.38	59.77	33.37	56.31	59.99	57.88	24.24	64.11	20
21	69.17	59.60	34.23	56.32	60.72	58.01	24.94	64.35	21
22	69.98	59.45	35.02	56.31	61.48	58.11	25.69	64.61	22
23	70.75	59.31	35.78	56.29	62.29	58.22	26.47	64.90	23
24	71.47	59.16	36.56	56.25	63.15	58.33	27.25	65.20	24
25	72.13	59.02	37.37	56.22	64.08	58.46	28.01	65.52	25
26	72.75	58.86	38.23	56.17	65.03	58.60	28.70	65.83	26
27	73.36	58.70	39.15	56.15	65.99	58.77	29.34	66.16	27
28	73.98	58.52	40.10	56.14	66.93	58.95	29.92	66.49	28
29	74.66	58.34	41.07	56.14	67.84	59.16	30.44	66.80	29
30	75.41	58.16	42.11	56.18	68.71	59.37	30.94	67.11	30
31	76.21	57.98	43.12	56.22	69.53	59.59	31.44	67.41	31
32	77.07	57.82	44.08	56.29	70.32	59.79	31.91	67.69	32

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris,*) FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	1h 10m	88° 35′	1h 10m	88° 35′	1h 10m	88° 35′	1h 10m	88° 35′	
1	31s.91	7″.69	43s.97	18″.05	44s.69	29″.59	33s.00	39″.32	1
2	32.41	7.98	44.22	18.41	44.59	29.99	32.39	39.62	2
3	32.93	8.26	44.49	18.75	44.47	30.38	31.72	39.91	3
4	33.48	8.55	44.79	19.13	44.27	30.78	30.99	40.16	4
5	34.07	8.85	45.08	19.53	44.00	31.16	30.23	40.39	5
6	34.68	9.17	45.35	19.93	43.65	31.53	29.49	40.61	6
7	35.30	9.50	45.57	20.34	43.25	31.89	28.77	40.80	7
8	35.90	9.84	45.72	20.74	42.83	32.21	28.09	41.01	8
9	36.49	10.21	45.80	21.15	42.42	32.51	27.48	41.21	9
10	37.02	10.59	45.82	21.54	42.05	32.81	26.91	41.43	10
11	37.50	10.96	45.80	21.90	41.72	33.13	26.33	41.66	11
12	37.90	11.33	45.73	22.25	41.46	33.43	25.74	41.90	12
13	38.23	11.67	45.72	22.58	41.21	33.76	25.12	42.15	13
14	38.51	12.00	45.74	22.92	40.98	34.10	24.45	42.39	14
15	38.84	12.32	45.82	23.27	40.71	34.46	23.73	42.62	15
16	39.20	12.63	45.93	23.64	40.39	34.83	22.96	42.84	16
17	39.63	12.93	46.06	24.02	40.01	35.19	22.13	43.03	17
18	40.09	13.26	46.19	24.42	39.57	35.54	21.26	43.21	18
19	40.59	13.62	46.28	24.83	39.08	35.87	20.40	43.37	19
20	41.07	13.99	46.32	25.25	38.54	36.19	19.54	43.52	20
21	41.51	14.38	46.27	25.66	37.96	36.49	18.71	43.65	21
22	41.90	14.76	46.18	26.04	37.37	36.76	17.92	43.78	22
23	42.24	15.16	46.02	26.43	36.80	37.04	17.15	43.91	23
24	42.53	15.55	45.84	26.81	36.27	37.30	16.43	44.04	24
25	42.78	15.95	45.65	27.16	35.76	37.56	15.75	44.19	25
26	43.00	16.32	45.44	27.50	35.29	37.84	15.06	44.34	26
27	43.20	16.67	45.25	27.84	34.84	38.11	14.35	44.50	27
28	43.37	17.02	45.10	28.18	34.42	38.40	13.63	44.65	28
29	43.54	17.37	44.96	28.52	33.98	38.70	12.85	44.80	29
30	43.74	17.70	44.84	28.86	33.52	39.00	11.98	44.93	30
31	43.97	18.05	44.75	29.22	33.00	39.32	11.04	45.05	31
32	44.22	18.41	44.69	29.59	32.39	39.62	10.06	45.13	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h m 18 15	° ′ 86 36	h m 18 15	° ′ 86 36	h m 18 15	° ′ 86 35	h m 18 16	° ′ 86 35	
1	s 44.91	″ 16.45	s 48.08	″ 6.85	s 56.14	″ 60.95	s 7.12	″ 59.93	1
2	44.94	16.13	48.27	6.61	56.45	60.83	7.49	59.96	2
3	44.96	15.83	48.46	6.38	56.75	60.71	7.87	59.99	3
4	44.99	15.54	48.64	6.12	57.06	60.56	8.25	60.05	4
5	44.99	15.26	48.83	5.84	57.40	60.41	8.64	60.14	5
6	44.97	14.96	49.04	5.54	57.76	60.26	9.01	60.26	6
7	44.95	14.64	49.27	5.25	58.14	60.13	9.38	60.40	7
8	44.95	14.30	49.53	4.96	58.53	60.04	9.74	60.55	8
9	44.97	13.94	49.83	4.69	58.92	59.97	10.06	60.69	9
10	45.01	13.56	50.12	4.45	59.29	59.92	10.38	60.84	10
11	45.08	13.19	50.41	4.25	59.67	59.89	10.68	60.98	11
12	45.18	12.83	50.69	4.06	60.02	59.86	10.97	61.10	12
13	45.28	12.49	50.97	3.87	60.36	59.84	11.28	61.21	13
14	45.41	12.17	51.23	3.70	60.69	59.82	11.59	61.32	14
15	45.52	11.87	51.48	3.51	61.02	59.78	11.91	61.43	15
16	45.63	11.59	51.73	3.31	61.36	59.73	12.24	61.55	16
17	45.74	11.31	51.98	3.11	61.70	59.67	12.58	61.68	17
18	45.83	11.03	52.24	2.89	62.05	59.61	12.92	61.82	18
19	45.92	10.74	52.52	2.67	62.42	59.55	13.26	61.99	19
20	46.01	10.44	52.81	2.45	62.80	59.51	13.61	62.18	20
21	46.11	10.12	53.12	2.22	63.18	59.48	13.93	62.39	21
22	46.23	9.79	53.44	2.02	63.58	59.47	14.24	62.61	22
23	46.36	9.46	53.79	1.83	63.97	59.48	14.53	62.83	23
24	46.50	9.13	54.14	1.65	64.36	59.51	14.80	63.05	24
25	46.66	8.79	54.49	1.50	64.75	59.57	15.06	63.27	25
26	46.84	8.46	54.85	1.37	65.12	59.64	15.30	63.47	26
27	47.04	8.14	55.20	1.26	65.48	59.71	15.54	63.65	27
28	47.25	7.85	55.53	1.16	65.81	59.78	15.80	63.83	28
29	47.47	7.58	55.84	1.06	66.14	59.83	16.06	64.00	29
30	47.68	7.33	56.14	0.95	66.45	59.87	16.35	64.18	30
31	47.89	7.09	56.45	0.83	66.78	59.91	16.64	64.38	31
32	48.08	6.85	56.75	0.71	67.12	59.93	16.94	64.60	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	MAY.		JUNE.		JULY.		AUGUST.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h m 18 16	° ′ 86 36	h m 18 16	° ′ 86 36	h m 18 16	° ′ 86 36	h m 18 16	° ′ 86 36	
	s	″	s	″	s	″	s	″	
1	16.64	4.38	22.17	13.14	21.72	23.00	15.51	32.00	1
2	16.94	4.60	22.23	13.50	21.58	23.33	15.22	32.21	2
3	17.22	4.85	22.29	13.85	21.43	23.64	14.94	32.43	3
4	17.50	5.12	22.33	14.19	21.27	23.94	14.67	32.64	4
5	17.75	5.40	22.35	14.52	21.12	24.23	14.40	32.86	5
6	17.98	5.69	22.37	14.82	20.98	24.51	14.14	33.09	6
7	18.19	5.97	22.40	15.11	20.85	24.78	13.87	33.34	7
8	18.38	6.24	22.42	15.41	20.73	25.06	13.58	33.59	8
9	18.57	6.50	22.46	15.70	20.61	25.35	13.29	33.86	9
10	18.76	6.74	22.51	16.00	20.49	25.67	12.97	34.12	10
11	18.94	6.97	22.55	16.30	20.36	26.00	12.64	34.38	11
12	19.13	7.20	22.60	16.62	20.21	26.34	12.28	34.62	12
13	19.34	7.44	22.64	16.95	20.04	26.68	11.91	34.84	13
14	19.55	7.69	22.67	17.31	19.84	27.02	11.55	35.04	14
15	19.77	7.95	22.69	17.67	19.63	27.34	11.18	35.20	15
16	19.99	8.22	22.68	18.04	19.40	27.66	10.83	35.36	16
17	20.21	8.52	22.65	18.41	19.16	27.96	10.49	35.50	17
18	20.40	8.84	22.61	18.76	18.93	28.22	10.17	35.66	18
19	20.57	9.16	22.54	19.10	18.69	28.47	9.87	35.84	19
20	20.72	9.50	22.46	19.42	18.50	28.71	9.55	36.03	20
21	20.86	9.82	22.40	19.72	18.30	28.96	9.22	36.25	21
22	20.98	10.14	22.33	20.00	18.10	29.21	8.87	36.47	22
23	21.08	10.45	22.28	20.29	17.90	29.49	8.50	36.68	23
24	21.18	10.73	22.25	20.57	17.70	29.79	8.11	36.88	24
25	21.29	11.00	22.21	20.89	17.48	30.10	7.71	37.06	25
26	21.40	11.26	22.18	21.23	17.24	30.41	7.31	37.22	26
27	21.53	11.53	22.13	21.58	16.98	30.72	6.90	37.36	27
28	21.67	11.81	22.06	21.93	16.70	31.02	6.50	37.48	28
29	21.81	12.11	21.97	22.29	16.41	31.28	6.11	37.60	29
30	21.94	12.43	21.85	22.66	16.11	31.54	5.73	37.70	30
31	22.06	12.78	21.72	23.00	15.81	31.78	5.35	37.82	31
32	22.17	13.14	21.58	23.33	15.51	32.00	4.99	37.93	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h m 18 15	° ′ 86 36	h m 18 15	° ′ 86 36	h m 18 15	° ′ 86 36	h m 18 15	° ′ 86 36	
1	s 64.99	″ 37.93	s 52.65	″ 39.74	s 40.13	″ 37.05	s 30.94	″ 30.15	1
2	64.63	38.05	52.25	39.76	39.73	36.90	30.70	29.83	2
3	64.27	38.18	51.83	39.78	39.33	36.74	30.46	29.50	3
4	63.90	38.32	51.40	39.79	38.94	36.54	30.26	29.16	4
5	63.52	38.46	50.95	39.79	38.56	36.34	30.08	28.83	5
6	63.13	38.61	50.50	39.77	38.20	36.10	29.92	28.51	6
7	62.71	38.76	50.04	39.73	37.86	35.86	29.77	28.20	7
8	62.27	38.89	49.59	39.66	37.55	35.62	29.62	27.92	8
9	61.83	39.00	49.15	39.57	37.25	35.41	29.46	27.64	9
10	61.39	39.08	48.72	39.48	36.95	35.22	29.30	27.38	10
11	60.95	39.14	48.33	39.37	36.65	35.04	29.12	27.12	11
12	60.52	39.18	47.94	39.28	36.33	34.86	28.92	26.84	12
13	60.12	39.21	47.56	39.20	36.00	34.68	28.74	26.51	13
14	59.72	39.25	47.19	39.14	35.66	34.50	28.57	26.18	14
15	59.34	39.30	46.80	39.09	35.32	34.30	28.40	25.84	15
16	58.97	39.37	46.40	39.06	34.98	34.07	28.25	25.49	16
17	58.58	39.45	45.98	39.00	34.64	33.81	28.13	25.13	17
18	58.18	39.54	45.54	38.93	34.31	33.54	28.03	24.77	18
19	57.75	39.64	45.10	38.84	34.01	33.26	27.94	24.41	19
20	57.32	39.71	44.67	38.72	33.73	32.98	27.87	24.07	20
21	56.87	39.77	44.25	38.60	33.45	32.70	27.80	23.74	21
22	56.40	39.81	43.83	38.45	33.20	32.42	27.75	23.43	22
23	55.95	39.83	43.43	38.29	32.96	32.16	27.69	23.13	23
24	55.50	39.82	43.05	38.13	32.72	31.91	27.62	22.84	24
25	55.07	39.82	42.68	37.97	32.49	31.66	27.55	22.55	25
26	54.64	39.79	42.32	37.82	32.25	31.44	27.47	22.24	26
27	54.24	39.77	41.96	37.68	32.01	31.21	27.38	21.93	27
28	53.83	39.74	41.61	37.55	31.74	30.96	27.30	21.59	28
29	53.43	39.73	41.25	37.42	31.48	30.71	27.24	21.22	29
30	53.04	39.73	40.89	37.30	31.21	30.45	27.19	20.85	30
31	52.65	39.74	40.51	37.19	30.94	30.15	27.17	20.47	31
32	52.25	39.76	40.13	37.05	30.70	29.83	27.19	20.09	32

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Andromedæ.				γ Pegasi. (*Algenib.*)				β Hydræ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
	0h 1m		28° 20′		0h 6m		14° 25′		0h 18m		78° 0′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	22.60	0.14	36.4	1.0	14.89	0.12	47.3	0.9	31.56	0.93	90.8	1.1
11	22.46	0.13	35.4	1.3	14.77	0.11	46.4	1.0	30.63	0.88	89.7	1.6
21	22.33	0.12	34.1	1.4	14.66	0.10	45.4	1.1	29.75	0.79	88.1	2.2
31	22.21	0.10	32.7	1.6	14.56	0.09	44.3	1.0	28.96	0.67	85.9	2.8
Feb. 10	22.11	0.07	31.1	1.7	14.47	0.06	43.3	1.0	28.29	0.54	83.1	3.1
20	22.04	0.04	29.4	1.6	14.41	0.03	42.3	1.0	27.75	0.42	80.0	3.4
March 1	22.00	0.00	27.8	1.6	14.38	0.00	41.3	0.9	27.33	0.27	76.6	3.6
11	22.00	0.04	26.2	1.4	14.38	0.03	40.4	0.6	27.06	0.10	73.0	3.7
21	22.04	0.07	24.8	1.2	14.41	0.06	39.8	0.4	26.96	0.05	69.3	3.9
31	22.11	0.13	23.6	0.9	14.47	0.11	39.4	0.1	27.01	0.21	65.4	3.8
April 10	22.24	0.17	22.7	0.5	14.58	0.15	39.3	0.3	27.22	0.37	61.6	3.7
20	22.41	0.21	22.2	0.2	14.73	0.20	39.6	0.5	27.59	0.51	57.9	3.4
30	22.62	0.26	22.0	0.2	14.93	0.24	40.1	0.8	28.10	0.65	54.5	3.2
May 10	22.88	0.29	22.2	0.6	15.17	0.26	40.9	1.1	28.75	0.80	51.3	2.8
20	23.17	0.32	22.8	1.0	15.43	0.29	42.0	1.4	29.55	0.92	48.5	2.5
30	23.49	0.32	23.8	1.3	15.72	0.30	43.4	1.6	30.46	0.99	46.0	2.1
June 9	23.81	0.34	25.1	1.6	16.02	0.31	45.0	1.9	31.45	1.05	43.9	1.6
19	24.15	0.34	26.8	1.8	16.33	0.32	46.9	1.9	32.50	1.10	42.3	1.1
29	24.49	0.33	28.6	2.1	16.65	0.31	48.8	2.1	33.60	1.10	41.2	0.4
July 9	24.82	0.32	30.7	2.3	16.96	0.30	50.9	2.1	34.70	1.07	40.8	0.2
19	25.14	0.29	33.0	2.4	17.26	0.28	53.0	2.1	35.77	1.03	41.0	0.7
29	25.43	0.25	35.4	2.5	17.54	0.25	55.1	2.1	36.80	0.94	41.7	1.2
Aug. 8	25.68	0.22	37.9	2.5	17.79	0.21	57.2	1.9	37.74	0.82	42.9	1.7
18	25.90	0.18	40.4	2.5	18.00	0.17	59.1	1.8	38.56	0.67	44.6	2.3
28	26.08	0.14	42.9	2.3	18.17	0.13	60.9	1.6	39.23	0.51	46.9	2.6
Sept. 7	26.22	0.09	45.2	2.2	18.30	0.10	62.5	1.5	39.74	0.33	49.5	3.0
17	26.31	0.05	47.4	2.1	18.40	0.06	64.0	1.3	40.07	0.14	52.5	3.0
27	26.36	0.02	49.5	1.8	18.46	0.02	65.3	1.0	40.21	0.04	55.5	3.1
Oct. 7	26.38	0.02	51.3	1.5	18.48	0.01	66.3	0.7	40.17	0.24	58.6	3.0
17	26.36	0.04	52.8	1.3	18.47	0.04	67.0	0.5	39.93	0.42	61.6	3.1
27	26.32	0.08	54.1	1.0	18.43	0.06	67.5	0.3	39.51	0.58	64.7	2.6
Nov. 6	26.24	0.10	55.1	0.7	18.37	0.08	67.8	0.0	38.93	0.73	67.3	2.1
16	26.14	0.11	55.8	0.3	18.29	0.09	67.8	0.1	38.20	0.84	69.4	1.7
26	26.03	0.13	56.1	0.0	18.20	0.11	67.7	0.3	37.36	0.92	71.1	1.1
Dec. 6	25.90	0.14	56.1	0.2	18.09	0.12	67.4	0.5	36.44	0.96	72.2	0.5
16	25.76	0.14	55.9	0.6	17.97	0.12	66.9	0.7	35.48	0.97	72.7	0.1
26	25.62	0.15	55.3	0.9	17.85	0.13	66.2	0.8	34.51	0.96	72.6	0.8
36	25.47		54.4		17.72		65.4		33.55		71.8	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Cassiopeæ.				β Ceti.				θ¹ Ceti.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	0h 32m		55° 47′		0h 36m		18° 43′		1h 17m		8° 52′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	49.99	0.28	48.6	0.6	46.35	0.13	64.8	0.4	14.65	0.13	71.0	0.8
11	49.71	0.27	48.0	1.0	46.22	0.13	65.2	0.2	14.52	0.13	71.8	0.6
21	49.44	0.27	47.0	1.4	46.09	0.11	65.4	0.0	14.39	0.12	72.4	0.3
31	49.17	0.24	45.6	1.9	45.98	0.11	65.4	0.3	14.27	0.12	72.7	0.1
Feb. 10	48.93	0.21	43.7	2.2	45.87	0.10	65.1	0.6	14.15	0.12	72.8	0.0
20	48.72	0.15	41.5	2.5	45.77	0.07	64.5	0.8	14.03	0.10	72.8	0.2
March 1	48.57	0.08	39.0	2.6	45.70	0.04	63.7	1.1	13.93	0.07	72.6	0.4
11	48.49	0.03	36.4	2.6	45.66	0.01	62.6	1.3	13.86	0.04	72.2	0.7
21	48.46	0.05	33.8	2.5	45.65	0.04	61.3	1.6	13.82	0.00	71.5	1.0
31	48.51	0.13	31.3	2.3	45.69	0.08	59.7	1.9	13.82	0.03	70.5	1.2
April 10	48.64	0.19	29.0	2.0	45.77	0.12	57.8	2.0	13.85	0.07	69.3	1.4
20	48.83	0.27	27.0	1.7	45.89	0.16	55.8	2.1	13.92	0.12	67.9	1.7
30	49.10	0.33	25.3	1.2	46.05	0.20	53.7	2.3	14.04	0.16	66.2	1.8
May 10	49.43	0.39	24.1	0.7	46.25	0.23	51.4	2.3	14.20	0.20	64.4	2.0
20	49.82	0.43	23.4	0.3	46.48	0.26	49.1	2.3	14.40	0.24	62.4	2.0
30	50.25	0.45	23.1	0.2	46.74	0.30	46.8	2.3	14.64	0.27	60.4	2.1
June 9	50.70	0.48	23.3	0.7	47.04	0.31	44.5	2.2	14.91	0.28	58.3	2.1
19	51.18	0.48	24.0	1.2	47.35	0.32	42.3	2.0	15.19	0.30	56.2	2.1
29	51.66	0.48	25.2	1.6	47.67	0.32	40.3	1.8	15.49	0.31	54.1	2.0
July 9	52.14	0.46	26.8	2.1	47.99	0.32	38.5	1.6	15.80	0.30	52.1	1.8
19	52.60	0.42	28.9	2.4	48.31	0.30	36.9	1.2	16.10	0.30	50.3	1.5
29	53.02	0.39	31.3	2.6	48.61	0.27	35.7	0.9	16.40	0.29	48.8	1.3
Aug. 8	53.41	0.34	33.9	2.9	48.88	0.24	34.8	0.5	16.69	0.25	47.5	1.0
18	53.75	0.29	36.8	3.0	49.12	0.20	34.3	0.2	16.94	0.22	46.5	0.8
28	54.04	0.24	39.8	3.2	49.32	0.17	34.1	0.1	17.16	0.19	45.7	0.4
Sept. 7	54.28	0.18	43.0	3.2	49.49	0.12	34.2	0.4	17.35	0.17	45.3	0.1
17	54.46	0.13	46.2	3.2	49.61	0.08	34.6	0.9	17.52	0.13	45.2	0.3
27	54.59	0.06	49.4	3.1	49.69	0.05	35.5	1.1	17.65	0.10	45.5	0.4
Oct. 7	54.65	0.00	52.5	2.9	49.74	0.01	36.6	1.2	17.75	0.06	45.9	0.7
17	54.65	0.04	55.4	2.7	49.75	0.02	37.8	1.3	17.81	0.02	46.6	0.9
27	54.61	0.08	58.1	2.5	49.73	0.05	39.1	1.4	17.83	0.00	47.5	1.1
Nov. 6	54.53	0.13	60.6	2.1	49.68	0.07	40.5	1.4	17.83	0.03	48.6	1.1
16	54.40	0.19	62.7	1.7	49.61	0.09	41.9	1.4	17.80	0.06	49.7	1.2
26	54.21	0.22	64.4	1.2	49.52	0.11	43.3	1.3	17.74	0.07	50.9	1.1
Dec. 6	53.99	0.25	65.6	0.8	49.41	0.12	44.6	1.0	17.67	0.09	52.0	1.1
16	53.74	0.27	66.4	0.2	49.29	0.13	45.6	0.8	17.58	0.11	53.1	0.9
26	53.47	0.28	66.6	0.3	49.16	0.13	46.4	0.6	17.47	0.13	54.0	0.9
36	53.19		66.3		49.03		47.0		17.34		54.9	

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Eridani. (*Achernar.*)		α Arietis.		γ Ceti.	
	Right Ascension.	Dec. *South.*	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*
	$1^{h}\ 32^{m}$	$57^{\circ}\ 55'$	$1^{h}\ 59^{m}$	$22^{\circ}\ 49'$	$2^{h}\ 36^{m}$	$2^{\circ}\ 39'$
	s s	" "	s s	" "	s s	" "
Jan. 1	39.30 0.34	56.5 0.4	32.37 0.13	12.0 0.4	16.93 0.10	38.6 0.8
11	38.96 0.35	56.9 0.2	32.24 0.14	11.6 0.6	16.83 0.12	37.8 0.7
21	38.61 0.34	56.7 0.7	32.10 0.15	11.0 0.7	16.71 0.14	37.1 0.7
31	38.27 0.32	56.0 1.3	31.95 0.15	10.3 0.8	16.57 0.15	36.4 0.6
Feb. 10	37.95 0.29	54.7 1.7	31.80 0.15	9.5 1.0	16.42 0.15	35.8 0.4
20	37.66 0.26	53.0 2.3	31.65 0.13	8.5 1.0	16.27 0.15	35.4 0.2
March 1	37.40 0.22	50.7 2.6	31.52 0.11	7.5 1.0	16.12 0.13	35.2 0.1
11	37.18 0.16	48.1 2.9	31.41 0.08	6.5 1.0	15.99 0.11	35.1 0.0
21	37.02 0.11	45.2 3.2	31.33 0.05	5.5 0.8	15.88 0.07	35.1 0.2
31	36.91 0.04	42.0 3.2	31.28 0.01	4.7 0.7	15.81 0.03	35.3 0.4
April 10	36.87 0.03	38.8 3.5	31.27 0.05	4.0 0.5	15.78 0.01	35.7 0.6
20	36.90 0.11	35.3 3.7	31.32 0.10	3.5 0.3	15.79 0.04	36.3 0.8
30	37.01 0.18	31.6 3.5	31.42 0.15	3.2 0.0	15.83 0.09	37.1 1.0
May 10	37.19 0.23	28.1 3.4	31.57 0.19	3.2 0.2	15.92 0.14	38.1 1.2
20	37.42 0.30	24.7 3.1	31.76 0.22	3.4 0.5	16.06 0.18	39.3 1.5
30	37.72 0.36	21.6 2.9	31.98 0.27	3.9 0.8	16.24 0.21	40.8 1.7
June 9	38.08 0.40	18.7 2.6	32.25 0.30	4.7 1.0	16.45 0.25	42.5 1.7
19	38.48 0.44	16.1 2.3	32.55 0.31	5.7 1.2	16.70 0.27	44.2 1.7
29	38.92 0.45	13.8 1.9	32.86 0.32	6.9 1.5	16.97 0.29	45.9 1.7
July 9	39.37 0.47	11.9 1.3	33.18 0.33	8.4 1.6	17.26 0.30	47.6 1.7
19	39.84 0.47	10.6 0.5	33.51 0.33	10.0 1.7	17.56 0.30	49.3 1.7
29	40.31 0.45	10.1 0.0	33.84 0.32	11.7 1.8	17.86 0.30	51.0 1.5
Aug. 8	40.76 0.43	10.1 0.4	34.16 0.29	13.5 1.7	18.16 0.28	52.5 1.3
18	41.19 0.39	10.5 1.1	34.45 0.27	15.2 1.7	18.44 0.27	53.8 1.2
28	41.58 0.33	11.6 1.6	34.72 0.24	16.9 1.6	18.71 0.25	55.0 0.9
Sept. 7	41.91 0.26	13.2 2.0	34.96 0.21	18.5 1.6	18.96 0.22	55.9 0.6
17	42.17 0.21	15.2 2.5	35.17 0.18	20.1 1.4	19.18 0.19	56.5 0.2
27	42.38 0.13	17.7 2.7	35.35 0.15	21.5 1.3	19.37 0.17	56.7 0.0
Oct. 7	42.51 0.07	20.4 2.8	35.50 0.12	22.8 1.1	19.54 0.15	56.7 0.1
17	42.58 0.01	23.2 3.0	35.62 0.09	23.9 1.0	19.69 0.11	56.6 0.3
27	42.57 0.07	26.2 3.0	35.71 0.06	24.9 0.8	19.80 0.08	56.3 0.4
Nov. 6	42.50 0.13	29.2 2.9	35.77 0.02	25.7 0.6	19.88 0.06	55.9 0.7
16	42.37 0.19	32.1 2.6	35.79 0.01	26.3 0.4	19.94 0.02	55.2 0.8
26	42.18 0.24	34.7 2.2	35.78 0.04	26.7 0.3	19.96 0.01	54.4 0.9
Dec. 6	41.94 0.28	36.9 1.8	35.74 0.06	27.0 0.0	19.95 0.03	53.5 0.8
16	41.66 0.32	38.7 1.2	35.68 0.09	27.0 0.1	19.92 0.07	52.7 0.8
26	41.34 0.34	39.9 0.7	35.59 0.12	26.9 0.3	19.85 0.09	51.9 0.9
36	41.00	40.6	35.47	26.6	19.76	51.0

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Ceti.				α Persei.				η Tauri.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	2h 55m		3° 33′		3h 14m		49° 22′		3h 39m		23° 40′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	12.01	0.09	13.2	0.8	40.55	0.16	36.8	0.9	26.45	0.07	57.9	0.1
11	11.92	0.12	12.4	0.7	40.39	0.19	37.7	0.5	26.38	0.11	57.8	0.1
21	11.80	0.15	11.7	0.6	40.20	0.22	38.2	0.2	26.27	0.14	57.7	0.2
31	11.65	0.15	11.1	0.5	39.98	0.25	38.4	0.2	26.13	0.17	57.5	0.3
Feb. 10	11.50	0.16	10.6	0.5	39.73	0.26	38.2	0.6	25.96	0.18	57.2	0.5
20	11.34	0.15	10.1	0.3	39.47	0.27	37.6	1.0	25.78	0.18	56.7	0.6
March 1	11.19	0.14	9.8	0.2	39.20	0.25	36.6	1.3	25.60	0.18	56.1	0.6
11	11.05	0.12	9.6	0.0	38.95	0.21	35.3	1.5	25.42	0.16	55.5	0.7
21	10.93	0.09	9.6	0.1	38.74	0.16	33.8	1.7	25.26	0.12	54.8	0.7
31	10.84	0.05	9.7	0.3	38.58	0.12	32.1	1.8	25.14	0.09	54.1	0.6
April 10	10.79	0.01	10.0	0.6	38.46	0.05	30.3	1.9	25.05	0.05	53.5	0.5
20	10.78	0.03	10.6	0.8	38.41	0.01	28.4	1.8	25.00	0.01	53.0	0.5
30	10.81	0.08	11.4	1.0	38.42	0.09	26.6	1.7	24.99	0.03	52.5	0.3
May 10	10.89	0.12	12.4	1.1	38.51	0.16	24.9	1.5	25.02	0.10	52.2	0.1
20	11.01	0.16	13.5	1.2	38.67	0.21	23.4	1.4	25.12	0.15	52.1	0.0
30	11.17	0.20	14.7	1.4	38.88	0.28	22.0	1.0	25.27	0.20	52.1	0.2
June 9	11.37	0.23	16.1	1.6	39.16	0.33	21.0	0.7	25.47	0.22	52.3	0.4
19	11.60	0.26	17.7	1.8	39.49	0.37	20.3	0.4	25.69	0.25	52.7	0.6
29	11.86	0.28	19.5	1.7	39.86	0.40	19.9	0.0	25.94	0.28	53.3	0.7
July 9	12.14	0.29	21.2	1.7	40.26	0.42	19.9	0.3	26.22	0.31	54.0	0.9
19	12.43	0.30	22.9	1.6	40.68	0.43	20.2	0.5	26.53	0.33	54.9	1.0
29	12.73	0.31	24.5	1.4	41.11	0.44	20.7	0.9	26.86	0.32	55.9	1.1
Aug. 8	13.04	0.29	25.9	1.3	41.55	0.43	21.6	1.2	27.18	0.32	57.0	1.2
18	13.33	0.27	27.2	1.1	41.98	0.42	22.8	1.4	27.50	0.31	58.2	1.1
28	13.60	0.25	28.3	1.0	42.40	0.40	24.2	1.6	27.81	0.30	59.3	1.1
Sept. 7	13.85	0.24	29.3	0.6	42.80	0.37	25.8	1.8	28.11	0.28	60.4	1.0
17	14.09	0.22	29.9	0.3	43.17	0.33	27.6	1.8	28.39	0.27	61.4	0.9
27	14.31	0.19	30.2	0.1	43.50	0.30	29.4	2.0	28.66	0.24	62.3	0.9
Oct. 7	14.50	0.16	30.3	0.1	43.80	0.28	31.4	2.1	28.90	0.22	63.2	0.7
17	14.66	0.13	30.2	0.4	44.08	0.23	33.5	2.1	29.12	0.20	63.9	0.7
27	14.79	0.10	29.8	0.5	44.31	0.19	35.6	2.1	29.32	0.17	64.6	0.6
Nov. 6	14.89	0.07	29.3	0.6	44.50	0.14	37.7	2.0	29.49	0.13	65.2	0.5
16	14.96	0.04	28.7	0.8	44.64	0.09	39.7	2.0	29.62	0.10	65.7	0.4
26	15.00	0.01	27.9	0.8	44.73	0.03	41.7	1.8	29.72	0.07	66.1	0.3
Dec. 6	15.01	0.02	27.1	0.9	44.76	0.02	43.5	1.7	29.79	0.02	66.4	0.2
16	14.99	0.05	26.2	0.8	44.74	0.08	45.2	1.4	29.81	0.02	66.6	0.1
26	14.94	0.08	25.4	0.8	44.66	0.14	46.6	1.0	29.79	0.06	66.7	0.0
36	14.86		24.6		44.52		47.6		29.73		66.7	

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ¹ Eridani.		α Tauri. (*Aldebaran.*)		α Aurigæ. (*Capella.*)	
	Right Ascension.	Dec. *South.*	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*
	h m 3 51	° ′ 13 53	h m 4 28	° ′ 16 13	h m 5 6	° ′ 45 51
	s s	″ ″	s s	″ ″	s s	″ ″
Jan. 1	42.87 0.08	58.5 1.5	9.43 0.03	57.3 0.3	42.05 0.02	20.7 1.3
11	42.79 0.11	60.0 1.2	9.40 0.07	57.0 0.3	42.03 0.08	22.0 1.2
21	42.68 0.14	61.2 1.0	9.33 0.12	56.7 0.4	41.95 0.13	23.2 0.9
31	42.54 0.16	62.2 0.8	9.21 0.15	56.3 0.3	41.82 0.19	24.1 0.7
Feb. 10	42.38 0.18	63.0 0.4	9.06 0.17	56.0 0.4	41.63 0.22	24.8 0.4
20	42.20 0.19	63.4 0.1	8.89 0.17	55.6 0.4	41.41 0.25	25.2 0.1
March 1	42.01 0.18	63.5 0.2	8.72 0.18	55.2 0.4	41.16 0.26	25.3 0.2
11	41.83 0.17	63.3 0.4	8.54 0.18	54.8 0.3	40.90 0.26	25.1 0.5
21	41.66 0.14	62.9 0.7	8.36 0.15	54.5 0.3	40.64 0.24	24.6 0.7
31	41.52 0.11	62.2 1.0	8.21 0.12	54.2 0.2	40.40 0.21	23.9 0.9
April 10	41.41 0.08	61.2 1.3	8.09 0.09	54.0 0.2	40.19 0.17	23.0 1.2
20	41.33 0.03	59.9 1.6	8.00 0.05	53.8 0.0	40.02 0.11	21.8 1.4
30	41.30 0.01	58.3 1.8	7.95 0.00	53.8 0.1	39.91 0.05	20.4 1.4
May 10	41.31 0.05	56.5 2.0	7.95 0.03	53.9 0.2	39.86 0.01	19.0 1.5
20	41.36 0.11	54.5 2.1	7.98 0.09	54.1 0.3	39.85 0.07	17.5 1.4
30	41.47 0.15	52.4 2.2	8.07 0.14	54.4 0.5	39.92 0.13	16.1 1.4
June 9	41.62 0.18	50.2 2.3	8.21 0.18	54.9 0.6	40.05 0.18	14.7 1.3
19	41.80 0.21	47.9 2.2	8.39 0.21	55.5 0.8	40.23 0.22	13.4 1.1
29	42.01 0.24	45.7 2.2	8.60 0.23	56.3 0.8	40.45 0.28	12.3 0.9
July 9	42.25 0.27	43.5 2.0	8.83 0.27	57.1 0.9	40.73 0.32	11.4 0.8
19	42.52 0.29	41.5 1.8	9.10 0.28	58.0 0.9	41.05 0.35	10.6 0.6
29	42.81 0.29	39.7 1.5	9.38 0.29	58.9 1.0	41.40 0.38	10.0 0.3
Aug. 8	43.10 0.30	38.2 1.3	9.67 0.30	59.9 0.9	41.78 0.39	9.7 0.1
18	43.40 0.29	36.9 0.9	9.97 0.31	60.8 0.8	42.17 0.40	9.6 0.1
28	43.69 0.28	36.0 0.4	10.28 0.30	61.6 0.7	42.57 0.41	9.7 0.3
Sept. 7	43.97 0.26	35.6 0.0	10.58 0.29	62.3 0.6	42.98 0.41	10.0 0.4
17	44.23 0.24	35.6 0.3	10.87 0.28	62.9 0.4	43.39 0.39	10.4 0.5
27	44.47 0.23	35.9 0.6	11.15 0.26	63.3 0.3	43.78 0.39	10.9 0.7
Oct. 7	44.70 0.20	36.5 1.1	11.41 0.25	63.6 0.2	44.17 0.37	11.6 0.9
17	44.90 0.18	37.6 1.3	11.66 0.23	63.8 0.0	44.54 0.34	12.5 1.1
27	45.08 0.15	38.9 1.5	11.89 0.20	63.8 0.1	44.88 0.31	13.6 1.2
Nov. 6	45.23 0.11	40.4 1.8	12.09 0.18	63.7 0.2	45.19 0.28	14.8 1.2
16	45.34 0.08	42.2 1.9	12.27 0.14	63.5 0.2	45.47 0.25	16.0 1.3
26	45.42 0.06	44.1 1.9	12.41 0.10	63.3 0.3	45.72 0.20	17.3 1.4
Dec. 6	45.48 0.01	46.0 1.9	12.51 0.07	63.0 0.3	45.92 0.14	18.7 1.4
16	45.49 0.03	47.9 1.8	12.58 0.03	62.7 0.3	46.06 0.08	20.1 1.4
26	45.46 0.07	49.7 1.6	12.61 0.01	62.4 0.3	46.14 0.02	21.5 1.4
36	45.39	51.3	12.60	62.1	46.16	22.9

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Orionis. (*Rigel.*)				β Tauri.				δ Orionis.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
	h 5	m 8	8°	21′	h 5	m 17	28°	29′	h 5	m 25	0°	24′
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	2.25	0.01	49.3	1.6	44.38	0.00	16.9	0.4	5.81	0.00	16.7	1.2
11	2.24	0.06	50.9	1.4	44.38	0.04	17.3	0.3	5.81	0.03	17.9	1.1
21	2.18	0.10	52.3	1.2	44.34	0.08	17.6	0.3	5.78	0.08	19.0	1.0
31	2.08	0.14	53.5	1.0	44.26	0.13	17.9	0.2	5.70	0.12	20.0	0.8
Feb. 10	1.94	0.16	54.5	0.7	44.13	0.17	18.1	0.0	5.58	0.15	20.8	0.7
20	1.78	0.18	55.2	0.5	43.96	0.19	18.1	0.1	5.43	0.17	21.5	0.4
March 1	1.60	0.19	55.7	0.2	43.77	0.20	18.0	0.2	5.26	0.18	21.9	0.2
11	1.41	0.18	55.9	0.1	43.57	0.20	17.8	0.3	5.08	0.19	22.1	0.1
21	1.23	0.18	55.8	0.3	43.37	0.19	17.5	0.3	4.89	0.17	22.2	0.1
31	1.05	0.16	55.5	0.6	43.18	0.17	17.2	0.4	4.72	0.16	22.1	0.2
April 10	0.89	0.12	54.9	0.8	43.01	0.14	16.8	0.5	4.56	0.13	21.9	0.5
20	0.77	0.08	54.1	0.9	42.87	0.09	16.3	0.6	4.43	0.09	21.4	0.7
30	0.69	0.05	53.2	1.2	42.78	0.05	15.7	0.6	4.34	0.06	20.7	0.9
May 10	0.64	0.01	52.0	1.4	42.73	0.00	15.1	0.5	4.28	0.02	19.8	1.0
20	0.63	0.02	50.6	1.6	42.73	0.04	14.6	0.5	4.26	0.03	18.8	1.1
30	0.65	0.08	49.0	1.8	42.77	0.10	14.1	0.4	4.29	0.06	17.7	1.3
June 9	0.73	0.12	47.2	1.8	42.87	0.14	13.7	0.3	4.35	0.11	16.4	1.4
19	0.85	0.15	45.4	1.9	43.01	0.18	13.4	0.2	4.46	0.15	15.0	1.4
29	1.00	0.19	43.5	1.9	43.19	0.22	13.2	0.1	4.61	0.18	13.6	1.5
July 9	1.19	0.22	41.6	1.8	43.41	0.26	13.1	0.1	4.79	0.21	12.1	1.4
19	1.41	0.24	39.8	1.6	43.67	0.29	13.2	0.2	5.00	0.24	10.7	1.3
29	1.65	0.26	38.2	1.4	43.96	0.29	13.4	0.2	5.24	0.25	9.4	1.3
Aug. 8	1.91	0.27	36.8	1.3	44.25	0.31	13.6	0.2	5.49	0.26	8.1	1.0
18	2.18	0.28	35.5	1.0	44.56	0.32	13.8	0.3	5.75	0.27	7.1	0.8
28	2.46	0.28	34.5	0.7	44.88	0.32	14.1	0.3	6.02	0.28	6.3	0.5
Sept. 7	2.74	0.28	33.8	0.3	45.20	0.33	14.4	0.3	6.30	0.28	5.8	0.3
17	3.02	0.27	33.5	0.1	45.53	0.32	14.7	0.3	6.58	0.28	5.5	0.0
27	3.29	0.27	33.6	0.4	45.85	0.32	15.0	0.3	6.86	0.27	5.5	0.3
Oct. 7	3.56	0.25	34.0	0.8	46.17	0.30	15.3	0.3	7.13	0.27	5.8	0.5
17	3.81	0.24	34.8	1.2	46.47	0.29	15.6	0.3	7.40	0.25	6.3	0.9
27	4.05	0.22	36.0	1.4	46.76	0.27	15.9	0.3	7.65	0.23	7.2	1.1
Nov. 6	4.27	0.19	37.4	1.6	47.03	0.24	16.2	0.3	7.88	0.21	8.3	1.3
16	4.46	0.17	39.0	1.8	47.27	0.21	16.5	0.2	8.09	0.18	9.6	1.4
26	4.63	0.12	40.8	1.8	47.48	0.17	16.7	0.3	8.27	0.16	11.0	1.4
Dec. 6	4.75	0.08	42.6	1.8	47.65	0.13	17.0	0.3	8.43	0.11	12.4	1.5
16	4.83	0.05	44.4	1.8	47.78	0.08	17.3	0.4	8.54	0.07	13.9	1.4
26	4.88	0.01	46.2	1.7	47.86	0.03	17.7	0.4	8.61	0.03	15.3	1.4
36	4.89		47.9		47.89		18.1		8.64		16.7	

NOTE.—Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Leporis.				ε Orionis.				α Columbæ.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	5h 26m		17° 55′		5h 29m		1° 17′		5h 34m		34° 8′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	46.13	0.01	28.0	2.1	20.99	0.00	36.6	1.3	45.83	0.04	63.0	2.7
11	46.12	0.06	30.1	1.9	20.99	0.03	37.9	1.2	45.79	0.09	65.7	2.5
21	46.06	0.10	32.0	1.6	20.96	0.07	39.1	1.0	45.70	0.13	68.2	2.1
31	45.96	0.14	33.6	1.3	20.89	0.12	40.1	0.9	45.57	0.17	70.3	1.8
Feb. 10	45.82	0.17	34.9	1.0	20.77	0.15	41.0	0.6	45.40	0.21	72.1	1.3
20	45.65	0.19	35.9	0.7	20.62	0.17	41.6	0.5	45.19	0.23	73.4	0.9
March 1	45.46	0.20	36.6	0.3	20.45	0.18	42.1	0.2	44.96	0.23	74.3	0.4
11	45.26	0.20	36.9	0.0	20.27	0.18	42.3	0.1	44.73	0.25	74.7	0.1
21	45.06	0.19	36.9	0.4	20.09	0.18	42.4	0.1	44.48	0.24	74.6	0.5
31	44.87	0.18	36.5	0.7	19.91	0.16	42.3	0.3	44.24	0.22	74.1	0.8
April 10	44.69	0.15	35.8	1.0	19.75	0.13	42.0	0.5	44.02	0.20	73.3	1.3
20	44.54	0.11	34.8	1.2	19.62	0.10	41.5	0.7	43.82	0.17	72.0	1.7
30	44.43	0.08	33.6	1.6	19.52	0.07	40.8	0.9	43.65	0.12	70.3	2.0
May 10	44.35	0.04	32.0	1.8	19.45	0.02	39.9	1.0	43.53	0.07	68.3	2.3
20	44.31	0.01	30.2	1.9	19.43	0.03	38.9	1.1	43.46	0.02	66.0	2.6
30	44.32	0.04	28.3	2.1	19.46	0.06	37.8	1.3	43.44	0.02	63.4	2.7
June 9	44.36	0.10	26.2	2.2	19.52	0.10	36.5	1.4	43.46	0.07	60.7	2.8
19	44.46	0.13	24.0	2.3	19.62	0.14	35.1	1.5	43.53	0.11	57.9	2.9
29	44.59	0.17	21.7	2.3	19.76	0.18	33.6	1.5	43.64	0.16	55.0	2.8
July 9	44.76	0.20	19.4	2.1	19.94	0.21	32.1	1.4	43.80	0.19	52.2	2.7
19	44.96	0.22	17.3	2.0	20.15	0.23	30.7	1.4	43.99	0.23	49.5	2.5
29	45.18	0.25	15.3	1.9	20.38	0.24	29.3	1.2	44.22	0.26	47.0	2.2
Aug. 8	45.43	0.27	13.4	1.5	20.62	0.26	28.1	1.1	44.48	0.28	44.8	1.8
18	45.70	0.28	11.9	1.1	20.88	0.28	27.0	0.9	44.76	0.30	43.0	1.3
28	45.98	0.28	10.8	0.8	21.16	0.28	26.1	0.6	45.06	0.31	41.7	0.9
Sept. 7	46.26	0.29	10.0	0.3	21.44	0.28	25.5	0.3	45.37	0.31	40.8	0.4
17	46.55	0.28	9.7	0.2	21.72	0.28	25.2	0.1	45.68	0.32	40.4	0.2
27	46.83	0.28	9.9	0.5	22.00	0.27	25.3	0.4	46.00	0.30	40.6	0.8
Oct. 7	47.11	0.27	10.4	1.1	22.27	0.27	25.7	0.5	46.30	0.30	41.4	1.4
17	47.38	0.25	11.5	1.5	22.54	0.25	26.2	0.9	46.60	0.28	42.8	1.8
27	47.63	0.23	13.0	1.8	22.79	0.23	27.1	1.1	46.88	0.25	44.6	2.2
Nov. 6	47.86	0.21	14.8	2.0	23.02	0.21	28.2	1.3	47.13	0.22	46.8	2.7
16	48.07	0.18	16.8	2.3	23.23	0.19	29.5	1.5	47.35	0.18	49.5	2.9
26	48.25	0.13	19.1	2.4	23.42	0.16	31.0	1.5	47.53	0.14	52.4	2.9
Dec. 6	48.38	0.11	21.5	2.4	23.58	0.11	32.5	1.5	47.67	0.10	55.3	3.1
16	48.49	0.06	23.9	2.3	23.69	0.07	34.0	1.5	47.77	0.05	58.4	3.0
26	48.55	0.01	26.2	2.2	23.76	0.04	35.5	1.4	47.82	0.01	61.4	2.8
36	48.56		28.4		23.80		36.9		47.81		64.2	

• after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Orionis.				μ Geminorum.				α Argus. (*Canopus.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
	5h 47m		7° 22′		6h 14m		22° 34′		6h 20m		52° 37′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	50.85	0.03	36.0	0.9	46.53	0.07	40.8	0.0	58.77	0.04	29.5	3.5
11	50.88	0.02	35.1	0.8	46.60	0.01	40.8	0.0	58.73	0.11	33.0	3.2
21	50.86	0.06	34.3	0.7	46.61	0.04	40.8	0.0	58.62	0.16	36.2	2.8
31	50.80	0.10	33.6	0.6	46.57	0.09	40.8	0.1	58.46	0.23	39.0	2.5
Feb. 10	50.70	0.14	33.0	0.4	46.48	0.13	40.9	0.1	58.23	0.28	41.5	2.0
20	50.56	0.16	32.6	0.3	46.35	0.16	41.0	0.1	57.95	0.32	43.5	1.6
March 1	50.40	0.18	32.3	0.2	46.19	0.18	41.1	0.0	57.63	0.34	45.1	1.0
11	50.22	0.18	32.1	0.1	46.01	0.19	41.1	0.1	57.29	0.36	46.1	0.6
21	50.04	0.18	32.0	0.0	45.82	0.19	41.2	0.0	56.93	0.37	46.7	0.0
31	49.86	0.16	32.0	0.1	45.63	0.18	41.2	0.1	56.56	0.35	46.7	0.5
April 10	49.70	0.14	32.1	0.2	45.45	0.16	41.1	0.2	56.21	0.32	46.2	0.9
20	49.56	0.11	32.3	0.3	45.29	0.13	40.9	0.1	55.89	0.30	45.3	1.5
30	49.45	0.07	32.6	0.4	45.16	0.10	40.8	0.2	55.59	0.25	43.8	2.0
May 10	49.38	0.03	33.0	0.6	45.06	0.05	40.6	0.2	55.34	0.20	41.8	2.3
20	49.35	0.01	33.6	0.7	45.01	0.00	40.4	0.2	55.14	0.15	39.5	2.6
30	49.36	0.05	34.3	0.8	45.01	0.04	40.2	0.1	54.99	0.08	36.9	2.9
June 9	49.41	0.10	35.1	0.8	45.05	0.07	40.1	0.1	54.91	0.03	34.0	3.0
19	49.51	0.13	35.9	1.0	45.12	0.12	40.0	0.0	54.88	0.04	31.0	3.1
29	49.64	0.17	36.9	1.0	45.24	0.16	40.0	0.0	54.92	0.09	27.9	3.2
July 9	49.81	0.20	37.9	1.0	45.40	0.19	40.0	0.1	55.01	0.16	24.7	3.1
19	50.01	0.22	38.9	0.9	45.59	0.23	40.1	0.0	55.17	0.20	21.6	3.0
29	50.23	0.24	39.8	0.9	45.82	0.25	40.1	0.0	55.37	0.25	18.6	2.8
Aug. 8	50.47	0.26	40.7	0.7	46.07	0.27	40.1	0.1	55.62	0.30	15.8	2.3
18	50.73	0.27	41.4	0.6	46.34	0.27	40.2	0.0	55.92	0.34	13.5	1.8
28	51.00	0.28	42.0	0.4	46.61	0.29	40.2	0.0	56.26	0.37	11.7	1.4
Sept. 7	51.28	0.28	42.4	0.2	46.90	0.31	40.2	0.1	56.63	0.39	10.3	0.8
17	51.56	0.29	42.6	0.0	47.21	0.31	40.1	0.2	57.02	0.40	9.5	0.1
27	51.85	0.29	42.6	0.2	47.52	0.31	39.9	0.3	57.42	0.41	9.4	0.4
Oct. 7	52.14	0.28	42.4	0.5	47.83	0.31	39.6	0.3	57.83	0.40	9.8	1.1
17	52.42	0.26	41.9	0.7	48.14	0.31	39.3	0.3	58.23	0.38	10.9	1.8
27	52.68	0.26	41.2	0.8	48.45	0.29	39.0	0.4	58.61	0.35	12.7	2.3
Nov. 6	52.94	0.23	40.4	1.0	48.74	0.28	38.6	0.4	58.96	0.32	15.0	2.7
16	53.17	0.21	39.4	1.1	49.02	0.25	38.2	0.3	59.28	0.26	17.7	3.1
26	53.38	0.19	38.3	1.0	49.27	0.21	37.9	0.3	59.56	0.21	20.8	3.3
Dec. 6	53.57	0.14	37.3	1.0	49.48	0.18	37.6	0.3	59.77	0.15	24.1	3.6
16	53.71	0.09	36.3	1.0	49.66	0.15	37.3	0.1	59.92	0.08	27.7	3.6
26	53.80	0.05	35.3	1.0	49.81	0.09	37.2	0.0	60.00	0.01	31.3	3.5
36	53.85		34.3		49.90		37.2		60.01		34.8	

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	51 (Hev.) Cephei.				α Canis Majoris. (*Sirius.*)				ε Canis Majoris.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	6h 35m		87° 14′		6h 39m		16° 31′		6h 53m		28° 47′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	76.39	0.34	35.3	3.1	11.66	0.06	62.5	2.4	19.19	0.06	29.9	2.9
11	76.73	0.59	38.4	3.1	11.72	0.01	64.9	2.2	19.25	0.00	32.8	2.8
21	76.14	1.48	41.5	3.0	11.73	0.04	67.1	2.0	19.25	0.04	35.6	2.5
31	74.66	2.30	44.5	2.7	11.69	0.09	69.1	1.7	19.21	0.09	38.1	2.2
Feb. 10	72.36	3.01	47.2	2.3	11.60	0.13	70.8	1.4	19.12	0.14	40.3	1.9
20	69.35	3.60	49.5	1.7	11.47	0.16	72.2	1.1	18.98	0.18	42.2	1.5
March 1	65.75	4.03	51.2	1.2	11.31	0.19	73.3	0.8	18.80	0.20	43.7	1.1
11	61.72	4.29	52.4	0.6	11.12	0.19	74.1	0.4	18.60	0.22	44.8	0.7
21	57.43	4.37	53.0	0.0	10.93	0.20	74.5	0.1	18.38	0.22	45.5	0.2
31	53.06	4.27	53.0	0.6	10.73	0.19	74.6	0.2	18.16	0.21	45.7	0.1
April 10	48.79	4.01	52.4	1.1	10.54	0.18	74.4	0.5	17.95	0.21	45.6	0.6
20	44.78	3.60	51.3	1.6	10.36	0.15	73.9	0.9	17.74	0.19	45.0	1.0
30	41.18	3.08	49.7	2.1	10.21	0.12	73.0	1.1	17.55	0.15	44.0	1.3
May 10	38.10	2.44	47.6	2.6	10.09	0.09	71.9	1.3	17.40	0.12	42.7	1.5
20	35.66	1.73	45.0	2.8	10.00	0.05	70.6	1.5	17.28	0.09	41.2	1.9
30	33.93	0.97	42.2	3.0	9.95	0.01	69.1	1.8	17.19	0.05	39.3	2.2
June 9	32.96	0.19	39.2	3.1	9.94	0.03	67.3	1.9	17.14	0.00	37.1	2.4
19	32.77	0.59	36.1	3.2	9.97	0.06	65.4	2.0	17.14	0.04	34.7	2.4
29	33.36	1.36	32.9	3.1	10.03	0.10	63.4	2.1	17.18	0.08	32.3	2.5
July 9	34.72	2.10	29.8	3.0	10.13	0.14	61.3	2.0	17.26	0.11	29.8	2.6
19	36.82	2.77	26.8	2.8	10.27	0.16	59.3	1.8	17.37	0.16	27.2	2.4
29	39.59	3.38	24.0	2.6	10.43	0.19	57.5	1.7	17.53	0.19	24.8	2.2
Aug. 8	42.97	3.93	21.4	2.4	10.62	0.22	55.8	1.5	17.72	0.21	22.6	1.9
18	46.90	4.40	19.0	1.9	10.84	0.24	54.3	1.3	17.93	0.24	20.7	1.7
28	51.30	4.78	17.1	1.5	11.08	0.26	53.0	0.9	18.17	0.26	19.0	1.3
Sept. 7	56.08	5.07	15.6	1.2	11.34	0.27	52.1	0.4	18.43	0.28	17.7	0.8
17	61.15	5.25	14.4	0.6	11.61	0.28	51.7	0.0	18.71	0.30	16.9	0.2
27	66.40	5.33	13.8	0.1	11.89	0.29	51.7	0.4	19.01	0.31	16.7	0.3
Oct. 7	71.73	5.29	13.7	0.3	12.18	0.29	52.1	0.8	19.32	0.31	17.0	0.8
17	77.02	5.14	14.0	0.7	12.47	0.29	52.9	1.3	19.63	0.31	17.8	1.3
27	82.16	4.89	14.7	1.2	12.76	0.28	54.2	1.7	19.94	0.30	19.1	1.8
Nov. 6	87.05	4.49	15.9	1.7	13.04	0.26	55.9	1.9	20.24	0.28	20.9	2.2
16	91.54	3.98	17.6	2.1	13.30	0.23	57.8	2.3	20.52	0.25	23.1	2.6
26	95.52	3.35	19.7	2.5	13.53	0.20	60.1	2.4	20.77	0.22	25.7	2.9
Dec. 6	98.87	2.60	22.2	2.8	13.73	0.18	62.5	2.5	20.99	0.19	28.6	2.9
16	101.47	1.78	25.0	3.1	13.91	0.13	65.0	2.5	21.18	0.14	31.5	3.0
26	103.25	0.89	28.1	3.2	14.04	0.08	67.5	2.5	21.32	0.09	34.5	2.9
36	104.14		31.3		14.12		70.0		21.41		37.4	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	δ Geminorum.				α² Geminorum. (*Castor.*)				α Canis Minoris. (*Procyon.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	7h 12m		22° 13′		7h 25m		32° 10′		7h 32m		5° 33′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	2.47	0.13	36.5	0.1	57.45	0.15	47.8	0.4	13.12	0.13	66.4	1.3
11	2.60	0.07	36.4	0.1	57.60	0.09	48.2	0.5	13.25	0.08	65.1	1.2
21	2.67	0.01	36.3	0.1	57.69	0.03	48.7	0.7	13.33	0.03	63.9	1.0
31	2.68	0.04	36.4	0.2	57.72	0.03	49.4	0.7	13.36	0.02	62.9	0.8
Feb. 10	2.64	0.08	36.6	0.2	57.69	0.08	50.1	0.8	13.34	0.07	62.1	0.6
20	2.56	0.13	36.8	0.2	57.61	0.13	50.9	0.7	13.27	0.11	61.5	0.4
March 1	2.43	0.16	37.0	0.3	57.48	0.16	51.6	0.7	13.16	0.14	61.1	0.3
11	2.27	0.18	37.3	0.3	57.32	0.19	52.3	0.5	13.02	0.16	60.8	0.1
21	2.09	0.19	37.6	0.2	57.13	0.20	52.8	0.4	12.86	0.17	60.7	0.0
31	1.90	0.19	37.8	0.2	56.93	0.21	53.2	0.2	12.69	0.18	60.7	0.2
April 10	1.71	0.17	38.0	0.1	56.72	0.19	53.4	0.0	12.51	0.17	60.9	0.2
20	1.54	0.15	38.1	0.0	56.53	0.18	53.4	0.0	12.34	0.15	61.1	0.3
30	1.39	0.13	38.1	0.0	56.35	0.15	53.4	0.2	12.19	0.13	61.4	0.4
May 10	1.26	0.09	38.1	0.1	56.20	0.11	53.2	0.4	12.06	0.10	61.8	0.5
20	1.17	0.05	38.0	0.1	56.09	0.08	52.8	0.5	11.96	0.07	62.3	0.6
30	1.12	0.01	37.9	0.1	56.01	0.03	52.3	0.6	11.89	0.03	62.9	0.7
June 9	1.11	0.02	37.8	0.2	55.98	0.01	51.7	0.7	11.86	0.00	63.6	0.7
19	1.13	0.05	37.6	0.1	55.99	0.04	51.0	0.7	11.86	0.04	64.3	0.7
29	1.18	0.10	37.5	0.2	56.03	0.09	50.3	0.8	11.90	0.07	65.0	0.7
July 9	1.28	0.14	37.3	0.1	56.12	0.14	49.5	0.8	11.97	0.10	65.7	0.7
19	1.42	0.17	37.2	0.2	56.26	0.17	48.7	0.8	12.07	0.13	66.4	0.7
29	1.59	0.20	37.0	0.2	56.43	0.20	47.9	0.9	12.20	0.16	67.1	0.6
Aug. 8	1.79	0.22	36.8	0.3	56.63	0.23	47.0	0.8	12.36	0.19	67.7	0.5
18	2.01	0.24	36.5	0.3	56.86	0.25	46.2	0.8	12.55	0.20	68.2	0.3
28	2.25	0.26	36.2	0.4	57.11	0.28	45.4	0.9	12.75	0.22	68.5	0.1
Sept. 7	2.51	0.28	35.8	0.5	57.39	0.30	44.5	0.8	12.97	0.25	68.6	0.1
17	2.79	0.30	35.3	0.5	57.69	0.30	43.7	0.9	13.22	0.27	68.5	0.4
27	3.09	0.30	34.8	0.7	57.99	0.33	42.8	0.8	13.49	0.28	68.1	0.6
Oct. 7	3.39	0.32	34.1	0.7	58.32	0.34	42.0	0.8	13.77	0.29	67.5	0.8
17	3.71	0.32	33.4	0.8	58.66	0.36	41.2	0.8	14.06	0.29	66.7	1.1
27	4.03	0.32	32.6	0.8	59.02	0.36	40.4	0.7	14.35	0.30	65.6	1.2
Nov. 6	4.35	0.31	31.8	0.7	59.38	0.35	39.7	0.6	14.65	0.29	64.4	1.4
16	4.66	0.29	31.1	0.7	59.73	0.31	39.1	0.3	14.94	0.28	63.0	1.5
26	4.95	0.28	30.4	0.6	60.04	0.29	38.8	0.2	15.22	0.27	61.5	1.5
Dec. 6	5.23	0.24	29.8	0.5	60.33	0.28	38.6	0.0	15.49	0.23	60.0	1.6
16	5.47	0.19	29.3	0.5	60.61	0.23	38.6	0.1	15.72	0.19	58.4	1.5
26	5.66	0.14	28.8	0.3	60.84	0.17	38.7	0.3	15.91	0.15	56.9	1.3
36	5.80		28.5		61.01		39.0		16.06		55.6	

NOTE.—Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Geminorum. (*Pollux.*)				15 Argus.				ε Hydræ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	7h 37m		28° 20′		8h 1m		23° 54′		8h 39m		6° 54′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	1.90	0.16	53.7	0.1	47.42	0.14	57.8	3.0	36.50	0.20	45.5	1.4
11	2.06	0.10	53.8	0.3	47.56	0.09	60.8	2.8	36.70	0.15	44.1	1.2
21	2.16	0.04	54.1	0.4	47.65	0.03	63.6	2.6	36.85	0.09	42.9	1.0
31	2.20	0.02	54.5	0.5	47.68	0.02	66.2	2.4	36.94	0.04	41.9	0.8
Feb. 10	2.18	0.07	55.0	0.6	47.66	0.06	68.6	2.1	36.98	0.01	41.1	0.6
20	2.11	0.11	55.6	0.7	47.60	0.11	70.7	1.7	36.97	0.05	40.5	0.4
March 1	2.00	0.15	56.3	0.6	47.49	0.15	72.4	1.4	36.92	0.09	40.1	0.2
11	1.85	0.18	56.9	0.5	47.34	0.17	73.8	1.1	36.83	0.12	39.9	0.0
21	1.67	0.20	57.4	0.4	47.17	0.19	74.9	0.7	36.71	0.14	39.9	0.1
31	1.47	0.20	57.8	0.3	46.98	0.20	75.6	0.3	36.57	0.15	40.0	0.2
April 10	1.27	0.18	58.1	0.2	46.78	0.19	75.9	0.0	36.42	0.16	40.2	0.3
20	1.09	0.17	58.3	0.0	46.59	0.18	75.9	0.4	36.26	0.16	40.5	0.3
30	0.92	0.15	58.3	0.1	46.41	0.16	75.5	0.7	36.10	0.15	40.8	0.4
May 10	0.77	0.11	58.2	0.2	46.25	0.15	74.8	1.0	35.95	0.12	41.2	0.5
20	0.66	0.08	58.0	0.3	46.10	0.12	73.8	1.4	35.83	0.10	41.7	0.6
30	0.58	0.04	57.7	0.4	45.98	0.09	72.4	1.6	35.73	0.07	42.3	0.6
June 9	0.54	0.00	57.3	0.4	45.89	0.05	70.8	1.9	35.66	0.05	42.9	0.6
19	0.54	0.04	56.9	0.5	45.84	0.01	68.9	1.9	35.61	0.02	43.5	0.5
29	0.58	0.08	56.4	0.6	45.83	0.02	67.0	2.0	35.59	0.01	44.0	0.6
July 9	0.66	0.11	55.8	0.6	45.85	0.05	65.0	2.2	35.60	0.05	44.6	0.5
19	0.77	0.14	55.2	0.6	45.90	0.08	62.8	2.2	35.65	0.07	45.1	0.5
29	0.91	0.18	54.6	0.7	45.98	0.12	60.6	2.1	35.72	0.10	45.6	0.4
Aug. 8	1.09	0.21	53.9	0.7	46.10	0.16	58.5	1.9	35.82	0.12	46.0	0.2
18	1.30	0.23	53.2	0.7	46.26	0.18	56.6	1.6	35.94	0.15	46.2	0.1
28	1.53	0.26	52.5	0.8	46.44	0.21	55.0	1.4	36.09	0.18	46.3	0.1
Sept. 7	1.79	0.28	51.7	0.9	46.65	0.23	53.6	0.9	36.27	0.21	46.2	0.3
17	2.07	0.30	50.8	0.8	46.88	0.26	52.7	0.5	36.48	0.23	45.9	0.5
27	2.37	0.31	50.0	0.9	47.14	0.28	52.2	0.0	36.71	0.25	45.4	0.7
Oct. 7	2.68	0.33	49.1	0.9	47.42	0.29	52.2	0.5	36.96	0.28	44.7	1.0
17	3.01	0.33	48.2	0.9	47.71	0.31	52.7	0.9	37.24	0.29	43.7	1.3
27	3.34	0.34	47.3	0.8	48.02	0.32	53.6	1.4	37.53	0.30	42.4	1.4
Nov. 6	3.68	0.33	46.5	0.8	48.34	0.31	55.0	1.9	37.83	0.32	41.0	1.6
16	4.01	0.32	45.7	0.7	48.65	0.31	56.9	2.3	38.15	0.31	39.4	1.7
26	4.33	0.29	45.0	0.5	48.96	0.28	59.2	2.6	38.46	0.30	37.7	1.7
Dec. 6	4.62	0.28	44.5	0.3	49.24	0.25	61.8	2.8	38.76	0.28	36.0	1.6
16	4.90	0.23	44.2	0.2	49.49	0.21	64.6	2.8	39.04	0.25	34.4	1.6
26	5.13	0.18	44.0	0.1	49.70	0.16	67.4	2.8	39.29	0.21	32.8	1.5
36	5.31		44.1		49.86		70.2		39.50		31.3	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	ι Ursæ Majoris.				ι Argus.				α Hydræ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	h m		° ′		h m		° ′		h m		° ′	
	8 49		48 33		9 13		58 42		9 20		8 4	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	55.46	0.28	65.2	0.9	29.92	0.28	15.7	3.7	56.16	0.22	23.6	2.3
11	55.74	0.22	66.1	1.2	30.20	0.19	19.4	3.8	56.38	0.18	25.9	2.2
21	55.96	0.15	67.3	1.5	30.39	0.11	23.2	3.8	56.56	0.13	28.1	2.0
31	56.11	0.07	68.8	1.7	30.50	0.03	27.0	3.8	56.69	0.08	30.1	1.8
Feb. 10	56.18	0.00	70.5	1.7	30.53	0.06	30.8	3.6	56.77	0.03	31.9	1.5
20	56.18	0.08	72.2	1.8	30.47	0.14	34.4	3.4	56.80	0.02	33.4	1.3
March 1	56.10	0.13	74.0	1.7	30.33	0.20	37.8	3.1	56.78	0.06	34.7	1.0
11	55.97	0.19	75.7	1.6	30.13	0.25	40.9	2.7	56.72	0.09	35.7	0.7
21	55.78	0.22	77.3	1.4	29.88	0.30	43.6	2.2	56.63	0.12	36.4	0.5
31	55.56	0.24	78.7	1.1	29.58	0.33	45.8	1.7	56.51	0.14	36.9	0.3
April 10	55.32	0.26	79.8	0.7	29.25	0.34	47.5	1.3	56.37	0.14	37.2	0.0
20	55.06	0.26	80.5	0.4	28.91	0.36	48.8	0.9	56.23	0.15	37.2	0.2
30	54.80	0.25	80.9	0.1	28.55	0.37	49.7	0.3	56.08	0.15	37.0	0.4
May 10	54.55	0.22	81.0	0.2	28.18	0.35	50.0	0.2	55.93	0.14	36.6	0.5
20	54.33	0.18	80.8	0.6	27.83	0.33	49.8	0.8	55.79	0.11	36.1	0.7
30	54.15	0.15	80.2	0.9	27.50	0.30	49.0	1.3	55.68	0.09	35.4	0.9
June 9	54.00	0.10	79.3	1.2	27.20	0.27	47.7	1.7	55.59	0.08	34.5	1.0
19	53.90	0.06	78.1	1.4	26.93	0.22	46.0	2.0	55.51	0.06	33.5	1.0
29	53.84	0.02	76.7	1.6	26.71	0.17	44.0	2.4	55.45	0.03	32.5	1.2
July 9	53.82	0.03	75.1	1.8	26.54	0.13	41.6	2.6	55.42	0.00	31.3	1.2
19	53.85	0.07	73.3	1.9	26.41	0.06	39.0	2.9	55.42	0.03	30.1	1.2
29	53.92	0.12	71.4	2.0	26.35	0.01	36.1	3.0	55.45	0.05	28.9	1.1
Aug. 8	54.04	0.17	69.4	2.1	26.34	0.07	33.1	3.0	55.50	0.08	27.8	1.1
18	54.21	0.21	67.3	2.2	26.41	0.14	30.1	2.9	55.58	0.11	26.7	0.9
28	54.42	0.24	65.1	2.2	26.55	0.20	27.2	2.7	55.69	0.14	25.8	0.6
Sept. 7	54.66	0.28	62.9	2.1	26.75	0.27	24.5	2.4	55.83	0.16	25.2	0.4
17	54.94	0.32	60.8	2.0	27.02	0.32	22.1	2.0	55.99	0.19	24.8	0.1
27	55.26	0.36	58.8	1.9	27.34	0.38	20.1	1.5	56.18	0.23	24.7	0.3
Oct. 7	55.62	0.39	56.9	1.8	27.72	0.43	18.6	0.8	56.41	0.26	25.0	0.6
17	56.01	0.41	55.1	1.6	28.15	0.47	17.8	0.2	56.67	0.28	25.6	0.9
27	56.42	0.43	53.5	1.3	28.62	0.50	17.6	0.3	56.95	0.29	26.5	1.3
Nov. 6	56.85	0.44	52.2	1.1	29.12	0.50	17.9	1.0	57.24	0.31	27.8	1.6
16	57.29	0.44	51.1	0.7	29.62	0.48	18.9	1.7	57.55	0.32	29.4	1.8
26	57.73	0.44	50.4	0.4	30.10	0.47	20.6	2.3	57.87	0.31	31.2	2.1
Dec. 6	58.17	0.40	50.0	0.0	30.57	0.44	22.9	2.8	58.18	0.30	33.8	2.3
16	58.57	0.36	50.0	0.4	31.01	0.38	25.7	3.2	58.48	0.28	35.6	2.3
26	58.93	0.31	50.4	0.8	31.39	0.30	28.9	3.5	58.76	0.24	37.9	2.3
36	59.24		51.2		31.69		32.4		59.00		40.2	

NOTE.—Before the 22d of March the Sidereal day of the Month begins at the Sidereal 6h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	θ Ursæ Majoris.				ε Leonis.				α Leonis. (*Regulus.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h 9	m 23	52°	17′	h 9	m 38	24°	23′	h 10	m 1	12°	37′
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	47.00	0.34	21.5	0.9	9.56	0.26	40.1	0.7	9.33	0.27	36.7	1.4
11	47.34	0.28	22.4	1.3	9.82	0.22	39.4	0.3	9.60	0.22	35.3	1.2
21	47.62	0.20	23.7	1.5	10.04	0.17	39.1	0.1	9.82	0.18	34.1	0.9
31	47.82	0.12	25.2	1.8	10.21	0.12	39.0	0.2	10.00	0.13	33.2	0.6
Feb. 10	47.94	0.04	27.0	2.0	10.33	0.06	39.2	0.4	10.13	0.08	32.6	0.3
20	47.98	0.03	29.0	2.0	10.39	0.00	39.6	0.6	10.21	0.02	32.3	0.1
March 1	47.95	0.11	31.0	2.0	10.39	0.04	40.2	0.8	10.23	0.02	32.2	0.2
11	47.84	0.17	33.0	1.9	10.35	0.08	41.0	0.8	10.21	0.06	32.4	0.3
21	47.67	0.21	34.9	1.7	10.27	0.12	41.8	0.9	10.15	0.08	32.7	0.4
31	47.46	0.24	36.6	1.5	10.15	0.14	42.7	0.9	10.07	0.11	33.1	0.5
April 10	47.22	0.26	38.1	1.1	10.01	0.15	43.6	0.8	9.96	0.13	33.6	0.6
20	46.96	0.28	39.2	0.7	9.86	0.16	44.4	0.8	9.83	0.14	34.2	0.6
30	46.68	0.28	39.9	0.4	9.70	0.16	45.2	0.6	9.69	0.14	34.8	0.6
May 10	46.40	0.26	40.3	0.0	9.54	0.15	45.8	0.4	9.55	0.14	35.4	0.6
20	46.14	0.22	40.3	0.4	9.39	0.13	46.2	0.3	9.41	0.12	36.0	0.6
30	45.92	0.19	39.9	0.8	9.26	0.11	46.5	0.2	9.29	0.11	36.6	0.5
June 9	45.73	0.16	39.1	1.1	9.15	0.09	46.7	0.0	9.18	0.09	37.1	0.4
19	45.57	0.12	38.0	1.3	9.06	0.07	46.7	0.2	9.09	0.07	37.5	0.3
29	45.45	0.07	36.7	1.7	8.99	0.04	46.5	0.3	9.02	0.05	37.8	0.3
July 9	45.38	0.03	35.0	2.0	8.95	0.01	46.2	0.5	8.97	0.02	38.1	0.1
19	45.35	0.02	33.0	2.1	8.94	0.02	45.7	0.6	8.95	0.00	38.2	0.0
29	45.37	0.08	30.9	2.3	8.96	0.05	45.1	0.8	8.95	0.02	38.2	0.1
Aug. 8	45.45	0.12	28.6	2.4	9.01	0.08	44.3	0.8	8.97	0.05	38.1	0.2
18	45.57	0.16	26.2	2.4	9.09	0.11	43.5	1.0	9.02	0.07	37.9	0.4
28	45.73	0.20	23.8	2.5	9.20	0.14	42.5	1.2	9.09	0.11	37.5	0.5
Sept. 7	45.98	0.26	21.3	2.5	9.34	0.17	41.3	1.3	9.20	0.13	37.0	0.8
17	46.19	0.29	18.8	2.5	9.51	0.20	40.0	1.5	9.33	0.16	36.2	0.9
27	46.48	0.33	16.3	2.3	9.71	0.23	38.5	1.6	9.49	0.20	35.3	1.2
Oct. 7	46.81	0.39	14.0	2.2	9.94	0.27	36.9	1.7	9.69	0.24	34.1	1.4
17	47.20	0.42	11.8	2.0	10.21	0.29	35.2	1.7	9.93	0.26	32.7	1.6
27	47.62	0.44	9.8	1.7	10.50	0.31	33.5	1.8	10.19	0.29	31.1	1.7
Nov. 6	48.06	0.46	8.1	1.4	10.81	0.33	31.7	1.8	10.48	0.31	29.4	1.8
16	48.52	0.47	6.7	1.1	11.14	0.34	29.9	1.7	10.79	0.32	27.6	1.9
26	48.99	0.47	5.6	0.7	11.48	0.34	28.2	1.5	11.11	0.33	25.7	1.8
Dec. 6	49.46	0.46	4.9	0.3	11.82	0.33	26.7	1.3	11.44	0.32	23.9	1.8
16	49.92	0.41	4.6	0.2	12.15	0.32	25.4	1.2	11.76	0.31	22.1	1.7
26	50.33	0.37	4.8	0.7	12.47	0.28	24.2	0.8	12.07	0.27	20.4	1.5
36	50.70		5.5		12.75		23.4		12.34		18.9	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	η Argus.		α Ursæ Majoris.		δ Leonis.	
	Right Ascension.	Dec. *South.*	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*
	h m 10 39 s s	° ′ 58 58 ″ ″	h m 10 55 s s	° ′ 62 28 ″ ″	h m 11 6 s s	° ′ 21 15 ″ ″
Jan. 1	50.11 0.42	3.4 3.1	20.26 0.54	39.2 0.3	53.72 0.31	50.7 1.3
11	50.53 0.36	6.5 3.4	20.80 0.48	39.5 0.9	54.03 0.29	49.4 1.0
21	50.89 0.28	9.9 3.6	21.28 0.41	40.4 1.5	54.32 0.25	48.4 0.7
31	51.17 0.20	13.5 3.7	21.69 0.32	41.9 1.9	54.57 0.20	47.7 0.3
Feb. 10	51.37 0.13	17.2 3.7	22.01 0.22	43.8 2.3	54.77 0.15	47.4 0.1
20	51.50 0.05	20.9 3.7	22.23 0.13	46.1 2.5	54.92 0.10	47.5 0.4
March 1	51.55 0.02	24.6 3.5	22.36 0.03	48.6 2.6	55.02 0.05	47.9 0.7
11	51.53 0.09	28.1 3.3	22.39 0.06	51.2 2.7	55.07 0.01	48.6 0.9
21	51.44 0.16	31.4 3.0	22.33 0.14	53.9 2.6	55.08 0.03	49.5 0.9
31	51.28 0.20	34.4 2.6	22.19 0.21	56.5 2.4	55.05 0.07	50.4 1.0
April 10	51.08 0.24	37.0 2.2	21.98 0.27	58.9 2.1	54.98 0.09	51.4 1.1
20	50.84 0.28	39.2 1.8	21.71 0.32	61.0 1.8	54.89 0.11	52.5 1.2
30	50.56 0.30	41.0 1.3	21.39 0.35	62.8 1.4	54.78 0.12	53.7 1.0
May 10	50.26 0.31	42.3 0.8	21.04 0.36	64.2 0.9	54.66 0.13	54.7 0.9
20	49.95 0.33	43.1 0.3	20.68 0.36	65.1 0.5	54.53 0.13	55.6 0.8
30	49.62 0.32	43.4 0.2	20.32 0.35	65.6 0.0	54.40 0.13	56.4 0.6
June 9	49.30 0.30	43.2 0.7	19.97 0.33	65.6 0.5	54.27 0.12	57.0 0.4
19	49.00 0.29	42.5 1.0	19.64 0.31	65.1 1.0	54.15 0.11	57.4 0.3
29	48.71 0.26	41.5 1.6	19.33 0.27	64.1 1.4	54.04 0.09	57.7 0.0
July 9	48.45 0.23	39.9 2.0	19.06 0.22	62.7 1.8	53.95 0.08	57.7 0.1
19	48.22 0.19	37.9 2.3	18.84 0.16	60.9 2.2	53.87 0.06	57.6 0.3
29	48.03 0.13	35.6 2.6	18.68 0.12	58.7 2.5	53.81 0.04	57.3 0.5
Aug. 8	47.90 0.07	33.0 2.8	18.56 0.07	56.2 2.8	53.77 0.01	56.8 0.7
18	47.83 0.01	30.2 2.9	18.49 0.02	53.4 3.1	53.76 0.01	56.1 0.9
28	47.82 0.04	27.3 2.8	18.47 0.06	50.3 3.1	53.77 0.03	55.2 1.1
Sept. 7	47.86 0.12	24.5 2.7	18.53 0.13	47.2 3.2	53.80 0.07	54.1 1.3
17	47.98 0.20	21.8 2.5	18.66 0.19	44.0 3.3	53.87 0.11	52.8 1.6
27	48.18 0.28	19.3 2.1	18.85 0.26	40.7 3.3	53.98 0.15	51.2 1.7
Oct. 7	48.46 0.34	17.2 1.7	19.11 0.33	37.4 3.2	54.13 0.19	49.5 2.0
17	48.80 0.40	15.5 1.2	19.44 0.40	34.2 3.0	54.32 0.22	47.5 2.2
27	49.20 0.45	14.3 0.7	19.84 0.45	31.2 2.8	54.54 0.26	45.3 2.2
Nov. 6	49.65 0.49	13.6 0.0	20.29 0.52	28.4 2.4	54.80 0.29	43.1 2.2
16	50.14 0.52	13.6 0.6	20.81 0.55	26.0 2.0	55.09 0.32	40.9 2.2
26	50.66 0.53	14.2 1.3	21.36 0.58	24.0 1.6	55.41 0.34	38.7 2.1
Dec. 6	51.19 0.52	15.5 2.0	21.94 0.60	22.4 1.1	55.75 0.34	36.6 1.9
16	51.71 0.49	17.5 2.3	22.54 0.58	21.3 0.5	56.09 0.34	34.7 1.7
26	52.20 0.44	19.8 2.8	23.12 0.56	20.8 0.1	56.43 0.32	33.0 1.5
36	52.64	22.6	23.68	20.9	56.75	31.5

Note.—Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLAÇES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	δ Hydræ et Crateris.				β Leonis.				γ Ursæ Majoris.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	11h 12m		14° 2′		11h 42m		15° 19′		11h 46m		54° 26′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	34.08	0.30	39.1	2.4	8.38	0.32	42.8	1.7	40.72	0.46	39.5	0.5
11	34.38	0.27	41.5	2.4	8.70	0.30	41.1	1.4	41.18	0.44	39.0	0.1
21	34.65	0.24	43.9	2.3	9.00	0.26	39.7	1.1	41.62	0.40	39.1	0.6
31	34.89	0.19	46.2	2.2	9.26	0.22	38.6	0.7	42.02	0.33	39.7	1.2
Feb. 10	35.08	0.14	48.4	2.0	9.48	0.17	37.9	0.3	42.35	0.26	40.9	1.6
20	35.22	0.10	50.4	1.7	9.65	0.13	37.6	0.0	42.61	0.20	42.5	2.0
March 1	35.32	0.05	52.1	1.5	9.78	0.09	37.6	0.2	42.81	0.12	44.5	2.3
11	35.37	0.01	53.6	1.3	9.87	0.05	37.8	0.5	42.93	0.05	46.8	2.5
21	35.38	0.02	54.9	1.0	9.92	0.00	38.3	0.8	42.98	0.03	49.3	2.6
31	35.36	0.05	55.9	0.7	9.92	0.03	39.1	0.8	42.95	0.09	51.9	2.6
April 10	35.31	0.07	56.6	0.5	9.89	0.06	39.9	0.9	42.86	0.14	54.5	2.4
20	35.24	0.10	57.1	0.3	9.83	0.08	40.8	1.0	42.72	0.18	56.9	2.2
30	35.14	0.11	57.4	0.1	9.75	0.09	41.8	1.1	42.54	0.22	59.1	1.9
May 10	35.03	0.12	57.5	0.2	9.66	0.11	42.9	1.0	42.32	0.24	61.0	1.5
20	34.91	0.11	57.3	0.4	9.55	0.12	43.9	0.9	42.08	0.26	62.5	1.1
30	34.80	0.12	56.9	0.6	9.43	0.11	44.8	0.7	41.82	0.26	63.6	0.7
June 9	34.68	0.11	56.3	0.7	9.32	0.12	45.5	0.7	41.56	0.26	64.3	0.3
19	34.57	0.11	55.6	0.9	9.20	0.11	46.2	0.5	41.30	0.26	64.6	0.2
29	34.46	0.09	54.7	1.0	9.09	0.10	46.7	0.4	41.04	0.24	64.4	0.7
July 9	34.37	0.08	53.7	1.0	8.99	0.09	47.1	0.2	40.80	0.21	63.7	1.1
19	34.29	0.07	52.7	1.1	8.90	0.09	47.3	0.0	40.59	0.19	62.6	1.4
29	34.22	0.05	51.6	1.2	8.81	0.07	47.3	0.2	40.40	0.16	61.2	1.9
Aug. 8	34.17	0.02	50.4	1.1	8.74	0.05	47.1	0.4	40.24	0.12	59.3	2.3
18	34.15	0.00	49.3	1.1	8.69	0.03	46.7	0.6	40.12	0.08	57.0	2.5
28	34.15	0.02	48.2	1.0	8.66	0.00	46.1	0.7	40.04	0.03	54.5	2.7
Sept. 7	34.17	0.06	47.2	0.7	8.66	0.03	45.4	1.0	40.01	0.01	51.8	3.0
17	34.23	0.09	46.5	0.5	8.69	0.07	44.4	1.3	40.02	0.06	48.8	3.1
27	34.32	0.13	46.0	0.2	8.76	0.11	43.1	1.5	40.08	0.13	45.7	3.3
Oct. 7	34.45	0.18	45.8	0.2	8.87	0.15	41.6	1.7	40.21	0.19	42.4	3.3
17	34.63	0.22	46.0	0.4	9.02	0.18	39.9	1.9	40.40	0.25	39.1	3.3
27	34.85	0.27	46.4	0.8	9.20	0.22	38.0	2.1	40.65	0.31	35.8	3.1
Nov. 6	35.12	0.29	47.2	1.2	9.42	0.26	35.9	2.1	40.96	0.36	32.7	2.9
16	35.41	0.30	48.4	1.6	9.68	0.30	33.8	2.1	41.32	0.42	29.8	2.7
26	35.71	0.32	50.0	1.8	9.98	0.31	31.7	2.2	41.74	0.45	27.1	2.4
Dec. 6	36.03	0.34	51.8	2.1	10.29	0.33	29.5	2.2	42.19	0.46	24.7	1.9
16	36.37	0.33	53.9	2.2	10.62	0.33	27.3	2.0	42.65	0.49	22.8	1.3
26	36.70	0.31	56.1	2.3	10.95	0.33	25.3	1.9	43.14	0.48	21.5	0.8
36	37.01		58.4		11.28		23.4		43.62		20.7	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.		β Chamæleontis.				α^1 Crucis.				β Corvi.			
		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
		h m 12 10		° ′ 78 33		h m 12 19		° ′ 62 20		h m 12 27		° ′ 22 38	
		s	s	″	″	s	s	″	″	s	s	″	″
Jan.	1	29.77	1.19	11.9	1.8	5.12	0.58	27.8	2.0	15.93	0.35	38.3	2.3
	11	30.96	1.09	13.7	2.3	5.70	0.54	29.8	2.5	16.28	0.32	40.6	2.3
	21	32.05	0.97	16.0	2.8	6.24	0.48	32.3	2.8	16.60	0.29	42.9	2.3
	31	33.02	0.84	18.8	3.2	6.72	0.42	35.1	3.2	16.89	0.26	45.2	2.4
Feb.	10	33.86	0.69	22.0	3.5	7.14	0.35	38.3	3.3	17.15	0.22	47.6	2.2
	20	34.55	0.51	25.5	3.7	7.49	0.28	41.6	3.4	17.37	0.18	49.8	2.1
March	1	35.06	0.35	29.2	3.8	7.77	0.20	45.0	3.5	17.55	0.14	51.9	1.9
	11	35.41	0.18	33.0	3.8	7.97	0.12	48.5	3.5	17.69	0.09	53.8	1.8
	21	35.59	0.01	36.8	3.7	8.09	0.06	52.0	3.4	17.78	0.06	55.6	1.5
	31	35.60	0.15	40.5	3.6	8.15	0.00	55.4	3.1	17.84	0.02	57.1	1.3
April	10	35.45	0.29	44.1	3.4	8.15	0.07	58.5	3.0	17.86	0.00	58.4	1.1
	20	35.16	0.44	47.5	3.1	8.08	0.14	61.5	2.7	17.86	0.04	59.5	0.8
	30	34.72	0.56	50.6	2.7	7.94	0.19	64.2	2.3	17.82	0.06	60.3	0.6
May	10	34.16	0.67	53.3	2.3	7.75	0.23	66.5	1.9	17.76	0.07	60.9	0.3
	20	33.49	0.76	55.6	1.9	7.52	0.25	68.4	1.5	17.69	0.09	61.2	0.1
	30	32.73	0.84	57.5	1.4	7.27	0.29	69.9	1.1	17.60	0.10	61.3	0.1
June	9	31.89	0.89	58.9	0.9	6.98	0.32	71.0	0.5	17.50	0.12	61.2	0.3
	19	31.00	0.92	59.8	0.4	6.66	0.34	71.5	0.0	17.38	0.12	60.9	0.5
	29	30.08	0.92	60.2	0.2	6.32	0.34	71.5	0.5	17.26	0.13	60.4	0.7
July	9	29.16	0.90	60.0	0.8	5.98	0.33	71.0	0.9	17.13	0.12	59.7	0.9
	19	28.26	0.85	59.2	1.3	5.65	0.33	70.1	1.3	17.01	0.11	58.8	1.0
	29	27.41	0.77	57.9	1.8	5.32	0.29	68.8	1.8	16.90	0.11	57.8	1.2
Aug.	8	26.64	0.65	56.1	2.3	5.03	0.25	67.0	2.1	16.79	0.10	56.6	1.2
	18	25.99	0.51	53.8	2.5	4.78	0.20	64.9	2.4	16.69	0.07	55.4	1.3
	28	25.48	0.36	51.3	2.8	4.58	0.14	62.5	2.6	16.62	0.04	54.1	1.2
Sept.	7	25.12	0.18	48.5	3.0	4.44	0.07	59.9	2.8	16.58	0.01	52.9	1.2
	17	24.94	0.02	45.5	3.2	4.37	0.01	57.1	2.8	16.57	0.01	51.7	1.1
	27	24.96	0.23	42.3	3.1	4.38	0.11	54.3	2.7	16.58	0.05	50.6	0.8
Oct.	7	25.19	0.44	39.2	2.8	4.49	0.21	51.6	2.4	16.63	0.11	49.8	0.5
	17	25.63	0.64	36.4	2.5	4.70	0.30	49.2	2.1	16.74	0.17	49.3	0.2
	27	26.27	0.81	33.9	2.2	5.00	0.37	47.1	1.7	16.91	0.21	49.1	0.0
Nov.	6	27.08	0.97	31.7	1.6	5.37	0.44	45.4	1.2	17.12	0.25	49.1	0.5
	16	28.05	1.11	30.1	1.1	5.81	0.51	44.2	0.7	17.37	0.29	49.6	0.9
	26	29.16	1.20	29.0	0.5	6.32	0.55	43.5	0.0	17.66	0.32	50.5	1.3
Dec.	6	30.36	1.24	28.5	0.2	6.87	0.59	43.5	0.5	17.98	0.33	51.8	1.6
	16	31.60	1.24	28.7	0.8	7.46	0.60	44.0	1.1	18.31	0.35	53.4	1.9
	26	32.84	1.21	29.5	1.4	8.06	0.58	45.1	1.7	18.66	0.34	55.3	2.1
	36	34.05		30.9		8.64		46.8		19.00		57.4	

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	12 Canum Venaticorum.				α Virginis. (*Spica*)				η Ursæ Majoris.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	h m 12 49		° ′ 39 2		h m 13 18		° ′ 10 27		h m 13 42		° ′ 49 58	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	40.10	0.39	53.9	1.6	2.65	0.33	4.2	2.0	10.41	0.43	75.8	1.9
11	40.49	0.37	52.3	1.1	2.98	0.33	6.2	2.0	10.84	0.43	73.9	1.3
21	40.86	0.35	51.2	0.5	3.31	0.31	8.2	1.9	11.27	0.42	72.6	0.7
31	41.21	0.31	50.7	0.0	3.62	0.28	10.1	1.8	11.69	0.40	71.9	0.1
Feb. 10	41.52	0.28	50.7	0.6	3.90	0.25	11.9	1.6	12.09	0.36	71.8	0.5
20	41.80	0.23	51.3	1.0	4.15	0.21	13.5	1.5	12.45	0.31	72.3	1.1
March 1	42.03	0.17	52.3	1.4	4.36	0.18	15.0	1.2	12.76	0.27	73.4	1.6
11	42.20	0.12	53.7	1.8	4.54	0.15	16.2	0.9	13.03	0.21	75.0	2.0
21	42.32	0.07	55.5	2.0	4.69	0.11	17.1	0.8	13.24	0.15	77.0	2.4
31	42.39	0.03	57.5	2.2	4.80	0.08	17.9	0.5	13.39	0.10	79.4	2.6
April 10	42.42	0.02	59.7	2.3	4.88	0.04	18.4	0.3	13.49	0.04	82.0	2.8
20	42.40	0.05	62.0	2.2	4.92	0.02	18.7	0.2	13.53	0.03	84.8	2.8
30	42.35	0.09	64.2	2.1	4.94	0.01	18.9	0.0	13.50	0.07	87.6	2.7
May 10	42.26	0.11	66.3	1.9	4.93	0.04	18.9	0.2	13.43	0.10	90.3	2.5
20	42.15	0.14	68.2	1.7	4.89	0.05	18.7	0.3	13.33	0.14	92.8	2.2
30	42.01	0.15	69.9	1.4	4.84	0.07	18.4	0.4	13.19	0.18	95.0	1.9
June 9	41.86	0.17	71.3	1.0	4.77	0.08	18.0	0.5	13.01	0.20	96.9	1.6
19	41.69	0.17	72.3	0.7	4.69	0.10	17.5	0.6	12.81	0.22	98.5	1.2
29	41.52	0.18	73.0	0.3	4.59	0.11	16.9	0.6	12.59	0.24	99.7	0.7
July 9	41.34	0.17	73.3	0.1	4.48	0.12	16.3	0.6	12.35	0.26	100.4	0.3
19	41.17	0.17	73.2	0.4	4.36	0.12	15.7	0.7	12.09	0.25	100.7	0.2
29	41.00	0.16	72.8	0.8	4.24	0.12	15.0	0.7	11.84	0.24	100.5	0.6
Aug. 8	40.84	0.14	72.0	1.2	4.12	0.12	14.3	0.7	11.60	0.24	99.9	1.1
18	40.70	0.12	70.8	1.5	4.00	0.10	13.6	0.7	11.36	0.23	98.8	1.6
28	40.58	0.10	69.3	1.9	3.90	0.08	12.9	0.6	11.13	0.20	97.2	1.9
Sept. 7	40.48	0.06	67.4	2.2	3.82	0.06	12.3	0.5	10.93	0.16	95.3	2.3
17	40.42	0.02	65.2	2.4	3.76	0.03	11.8	0.3	10.77	0.12	93.0	2.7
27	40.40	0.02	62.8	2.7	3.73	0.00	11.5	0.1	10.65	0.08	90.3	3.0
Oct. 7	40.42	0.07	60.1	2.8	3.73	0.06	11.4	0.2	10.57	0.02	87.3	3.1
17	40.49	0.13	57.3	3.1	3.79	0.11	11.6	0.3	10.55	0.04	84.2	3.4
27	40.62	0.18	54.2	3.1	3.90	0.15	11.9	0.6	10.59	0.11	80.8	3.5
Nov. 6	40.80	0.23	51.1	3.0	4.05	0.19	12.5	0.9	10.70	0.18	77.3	3.5
16	41.03	0.27	48.1	2.9	4.24	0.23	13.4	1.3	10.88	0.23	73.8	3.5
26	41.30	0.32	45.2	2.8	4.47	0.27	14.7	1.6	11.11	0.29	70.3	3.3
Dec. 6	41.62	0.35	42.4	2.6	4.74	0.31	16.3	1.7	11.40	0.35	67.0	2.9
16	41.97	0.37	39.8	2.3	5.05	0.33	18.0	1.8	11.75	0.40	64.1	2.6
26	42.34	0.38	37.5	1.8	5.38	0.33	19.8	1.9	12.15	0.42	61.5	2.1
36	42.72		35.7		5.71		21.7		12.57		59.4	

after the [illegible] of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	η Bootis.		β Centauri.		α Bootis. (*Arcturus.*)	
	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *South.*	Right Ascension.	Dec. *North.*
	$13^{h}\ 48^{m}$	$19^{\circ}\ 4'$	$13^{h}\ 54^{m}$	$59^{\circ}\ 42'$	$14^{h}\ 9^{m}$	$19^{\circ}\ 53'$
	s s	″ ″	s s	″ ″	s s	″ ″
Jan. 1	12.90 0.34	40.3 2.2	16.27 0.58	40.4 0.7	27.68 0.33	21.1 2.3
11	13.24 0.33	38.1 1.8	16.85 0.57	41.1 1.3	28.01 0.33	18.8 2.0
21	13.57 0.32	36.3 1.4	17.42 0.54	42.4 1.7	28.34 0.32	16.8 1.5
31	13.89 0.30	34.9 1.1	17.96 0.52	44.1 2.1	28.66 0.31	15.3 1.1
Feb. 10	14.19 0.27	33.8 0.6	18.48 0.48	46.2 2.3	28.97 0.28	14.2 0.7
20	14.46 0.24	33.2 0.1	18.96 0.44	48.5 2.6	29.25 0.25	13.5 0.2
March 1	14.70 0.21	33.1 0.3	19.40 0.37	51.1 2.9	29.50 0.22	13.3 0.2
11	14.91 0.18	33.4 0.6	19.77 0.31	54.0 2.9	29.72 0.19	13.5 0.6
21	15.09 0.13	34.0 1.0	20.08 0.26	56.9 2.9	29.91 0.15	14.1 0.9
31	15.22 0.10	35.0 1.2	20.34 0.20	59.8 3.0	30.06 0.12	15.0 1.2
April 10	15.32 0.06	36.2 1.4	20.54 0.14	62.8 2.9	30.18 0.08	16.2 1.5
20	15.38 0.03	37.6 1.6	20.68 0.07	65.7 2.8	30.26 0.05	17.7 1.6
30	15.41 0.00	39.2 1.6	20.75 0.02	68.5 2.6	30.31 0.02	19.3 1.7
May 10	15.41 0.03	40.8 1.6	20.77 0.04	71.1 2.4	30.33 0.01	21.0 1.7
20	15.38 0.05	42.4 1.6	20.73 0.09	73.5 2.0	30.32 0.04	22.7 1.6
30	15.33 0.07	44.0 1.5	20.64 0.15	75.5 1.7	30.28 0.06	24.3 1.5
June 9	15.26 0.09	45.5 1.2	20.49 0.19	77.2 1.4	30.22 0.09	25.8 1.4
19	15.17 0.11	46.7 1.1	20.30 0.23	78.6 1.0	30.13 0.10	27.2 1.2
29	15.06 0.12	47.8 0.9	20.07 0.27	79.6 0.6	30.03 0.12	28.4 1.0
July 9	14.94 0.13	48.7 0.7	19.80 0.29	80.2 0.1	29.91 0.13	29.4 0.7
19	14.81 0.14	49.4 0.3	19.51 0.31	80.3 0.3	29.78 0.15	30.1 0.4
29	14.67 0.15	49.7 0.1	19.20 0.32	80.0 0.8	29.63 0.15	30.5 0.2
Aug. 8	14.52 0.14	49.8 0.2	18.88 0.31	79.2 1.2	29.48 0.16	30.7 0.1
18	14.38 0.13	49.6 0.4	18.57 0.30	78.0 1.5	29.32 0.15	30.6 0.5
28	14.25 0.12	49.2 0.7	18.27 0.26	76.5 1.9	29.17 0.14	30.1 0.7
Sept. 7	14.13 0.09	48.5 0.9	18.01 0.21	74.6 2.2	29.03 0.12	29.4 0.9
17	14.04 0.07	47.6 1.3	17.80 0.15	72.4 2.4	28.91 0.09	28.5 1.3
27	13.97 0.03	46.3 1.6	17.65 0.07	70.0 2.5	28.82 0.05	27.2 1.6
Oct. 7	13.94 0.01	44.7 1.9	17.58 0.01	67.5 2.5	28.77 0.01	25.6 1.9
17	13.95 0.05	42.8 2.1	17.59 0.10	65.0 2.4	28.76 0.03	23.7 2.1
27	14.00 0.11	40.7 2.3	17.69 0.20	62.6 2.1	28.79 0.08	21.6 2.4
Nov. 6	14.11 0.16	38.4 2.5	17.89 0.28	60.5 1.9	28.87 0.13	19.2 2.6
16	14.27 0.20	35.9 2.5	18.17 0.36	58.6 1.5	29.00 0.18	16.6 2.6
26	14.47 0.24	33.4 2.6	18.53 0.43	57.1 1.1	29.18 0.22	14.0 2.7
Dec. 6	14.71 0.28	30.8 2.6	18.96 0.49	56.0 0.6	29.40 0.26	11.3 2.6
16	14.99 0.31	28.2 2.4	19.45 0.53	55.4 0.0	29.66 0.29	8.7 2.5
26	15.30 0.32	25.8 2.2	19.98 0.56	55.4 0.5	29.95 0.32	6.2 2.4
36	15.62	23.6	20.54	55.9	30.27	3.8

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α² Centauri.				ε Bootis.				α² Libræ.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
	14h 30m		60° 15′		14h 39m		27° 38′		14h 43m		15° 28′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	24.72	0.57	55.4	0.3	2.69	0.33	46.3	2.3	21.88	0.33	26.1	1.5
11	25.29	0.56	55.7	0.7	3.02	0.33	44.0	2.0	22.21	0.33	27.6	1.6
21	25.85	0.56	56.4	1.1	3.35	0.33	42.0	1.6	22.54	0.33	29.2	1.6
31	26.41	0.55	57.5	1.5	3.68	0.33	40.4	1.1	22.87	0.32	30.8	1.5
Feb. 10	26.96	0.52	59.0	1.9	4.01	0.31	39.3	0.6	23.19	0.29	32.3	1.5
20	27.48	0.48	60.9	2.2	4.32	0.28	38.7	0.0	23.48	0.28	33.8	1.3
March 1	27.96	0.43	63.1	2.4	4.60	0.26	38.7	0.4	23.76	0.25	35.1	1.2
11	28.39	0.36	65.5	2.6	4.86	0.22	39.1	0.9	24.01	0.23	36.3	1.0
21	28.75	0.31	68.1	2.7	5.08	0.19	40.0	1.3	24.24	0.20	37.3	0.8
31	29.06	0.26	70.8	2.7	5.27	0.15	41.3	1.7	24.44	0.17	38.1	0.6
April 10	29.32	0.20	73.5	2.8	5.42	0.11	43.0	1.9	24.61	0.14	38.7	0.4
20	29.52	0.15	76.3	2.7	5.53	0.08	44.9	2.1	24.75	0.10	39.1	0.3
30	29.67	0.08	79.0	2.6	5.61	0.05	47.0	2.2	24.85	0.08	39.4	0.2
May 10	29.75	0.03	81.6	2.4	5.66	0.01	49.2	2.2	24.93	0.05	39.6	0.0
20	29.78	0.05	84.0	2.2	5.67	0.03	51.4	2.1	24.98	0.01	39.6	0.1
30	29.73	0.11	86.2	2.0	5.64	0.05	53.5	2.0	24.99	0.01	39.5	0.1
June 9	29.62	0.16	88.2	1.7	5.59	0.08	55.5	1.8	24.98	0.04	39.4	0.3
19	29.46	0.20	89.9	1.3	5.51	0.10	57.3	1.5	24.94	0.06	39.1	0.3
29	29.26	0.25	91.2	0.9	5.41	0.13	58.8	1.2	24.88	0.08	38.8	0.4
July 9	29.01	0.30	92.1	0.5	5.28	0.15	60.0	1.0	24.80	0.11	38.4	0.5
19	28.71	0.32	92.6	0.1	5.13	0.16	61.0	0.6	24.69	0.13	37.9	0.5
29	28.39	0.34	92.7	0.4	4.97	0.17	61.6	0.3	24.56	0.14	37.4	0.5
Aug. 8	28.05	0.35	92.3	0.9	4.80	0.18	61.9	0.0	24.42	0.15	36.9	0.6
18	27.70	0.34	91.4	1.2	4.62	0.18	61.9	0.4	24.27	0.15	36.3	0.5
28	27.36	0.31	90.2	1.6	4.44	0.17	61.5	0.8	24.12	0.15	35.8	0.6
Sept. 7	27.05	0.28	88.6	1.9	4.27	0.15	60.7	1.1	23.97	0.13	35.2	0.6
17	26.77	0.22	86.7	2.2	4.12	0.13	59.6	1.4	23.84	0.10	34.6	0.6
27	26.55	0.16	84.5	2.3	3.99	0.09	58.2	1.8	23.74	0.07	34.0	0.4
Oct. 7	26.39	0.06	82.2	2.5	3.90	0.05	56.4	2.1	23.67	0.03	33.6	0.3
17	26.33	0.01	79.7	2.5	3.85	0.01	54.3	2.4	23.64	0.02	33.3	0.0
27	26.34	0.11	77.2	2.4	3.84	0.04	51.9	2.5	23.66	0.06	33.3	0.2
Nov. 6	26.45	0.20	74.8	2.1	3.88	0.10	49.4	2.8	23.72	0.12	33.5	0.4
16	26.65	0.30	72.7	1.8	3.98	0.15	46.6	2.9	23.84	0.17	33.9	0.7
26	26.95	0.38	70.9	1.4	4.13	0.20	43.7	2.9	24.01	0.22	34.6	0.9
Dec. 6	27.33	0.45	69.5	1.0	4.33	0.25	40.8	2.9	24.23	0.25	35.5	1.1
16	27.78	0.49	68.5	0.6	4.58	0.27	37.9	2.8	24.48	0.29	36.6	1.3
26	28.27	0.54	67.9	0.0	4.85	0.31	35.1	2.5	24.77	0.31	37.9	1.5
36	28.81		67.9		5.16		32.6		25.08		39.4	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Ursæ Minoris.				β Libræ.				α Coronæ Borealis.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	14h 51m		74° 42′		15h 9m		8° 52′		15h 28m		27° 10′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	4.31	0.77	22.1	2.3	41.67	0.30	42.4	1.6	55.43	0.29	20.2	2.6
11	5.08	0.84	19.8	1.7	41.97	0.32	44.0	1.6	55.72	0.31	17.6	2.2
21	5.92	0.86	18.1	1.0	42.29	0.32	45.6	1.5	56.03	0.33	15.4	1.8
31	6.78	0.88	17.1	0.3	42.61	0.31	47.1	1.4	56.36	0.33	13.6	1.4
Feb. 10	7.66	0.87	16.8	0.3	42.92	0.29	48.5	1.3	56.69	0.32	12.2	0.8
20	8.53	0.81	17.1	1.0	43.21	0.29	49.8	1.0	57.01	0.30	11.4	0.3
March 1	9.34	0.72	18.1	1.7	43.50	0.26	50.8	0.8	57.31	0.28	11.1	0.2
11	10.06	0.63	19.8	2.1	43.76	0.24	51.6	0.6	57.59	0.26	11.3	0.7
21	10.69	0.50	21.9	2.5	44.00	0.21	52.2	0.5	57.85	0.23	12.0	1.1
31	11.19	0.37	24.4	2.9	44.21	0.18	52.7	0.2	58.08	0.20	13.1	1.5
April 10	11.56	0.23	27.3	3.2	44.39	0.15	52.9	0.0	58.28	0.17	14.6	1.9
20	11.79	0.08	30.5	3.3	44.54	0.13	52.9	0.2	58.45	0.13	16.5	2.1
30	11.87	0.07	33.8	3.2	44.67	0.10	52.7	0.3	58.58	0.09	18.6	2.3
May 10	11.80	0.20	37.0	3.1	44.77	0.07	52.4	0.4	58.67	0.06	20.9	2.3
20	11.60	0.32	40.1	2.9	44.84	0.05	52.0	0.5	58.73	0.03	23.2	2.3
30	11.28	0.44	43.0	2.6	44.89	0.01	51.5	0.5	58.76	0.01	25.5	2.2
June 9	10.84	0.54	45.6	2.2	44.90	0.02	51.0	0.6	58.75	0.04	27.7	2.1
19	10.30	0.62	47.8	1.8	44.88	0.04	50.4	0.6	58.71	0.07	29.8	1.9
29	9.68	0.70	49.6	1.3	44.84	0.07	49.8	0.6	58.64	0.10	31.7	1.6
July 9	8.98	0.75	50.9	0.8	44.77	0.10	49.2	0.6	58.54	0.13	33.3	1.3
19	8.23	0.79	51.7	0.2	44.67	0.12	48.6	0.5	58.41	0.16	34.6	1.0
29	7.44	0.81	51.9	0.4	44.55	0.14	48.1	0.5	58.25	0.17	35.6	0.7
Aug. 8	6.63	0.80	51.5	0.8	44.41	0.15	47.6	0.5	58.08	0.19	36.3	0.4
18	5.83	0.79	50.7	1.3	44.26	0.15	47.1	0.5	57.89	0.20	36.7	0.0
28	5.04	0.75	49.4	1.7	44.11	0.15	46.6	0.4	57.69	0.19	36.7	0.4
Sept. 7	4.29	0.69	47.7	2.2	43.96	0.14	46.2	0.3	57.50	0.19	36.3	0.7
17	3.60	0.61	45.5	2.7	43.82	0.13	45.9	0.2	57.31	0.17	35.6	1.1
27	2.99	0.52	42.8	3.0	43.69	0.09	45.7	0.0	57.14	0.14	34.5	1.5
Oct. 7	2.47	0.41	39.8	3.4	43.60	0.05	45.7	0.1	57.00	0.10	33.0	1.9
17	2.06	0.27	36.4	3.5	43.55	0.01	45.8	0.3	56.90	0.06	31.1	2.2
27	1.79	0.14	32.9	3.7	43.54	0.03	46.1	0.5	56.84	0.01	28.9	2.4
Nov. 6	1.65	0.01	29.2	3.7	43.57	0.09	46.6	0.7	56.83	0.04	26.5	2.6
16	1.66	0.18	25.5	3.8	43.66	0.14	47.3	1.0	56.87	0.09	23.9	2.8
26	1.84	0.32	21.7	3.6	43.80	0.19	48.3	1.2	56.96	0.15	21.1	2.9
Dec. 6	2.16	0.47	18.1	3.4	43.99	0.22	49.5	1.2	57.11	0.20	18.2	3.0
16	2.63	0.60	14.7	3.1	44.21	0.26	50.7	1.5	57.31	0.25	15.2	2.9
26	3.23	0.71	11.6	2.6	44.47	0.29	52.2	1.6	57.56	0.27	12.3	2.6
36	3.94		9.0		44.76		53.8		57.83		9.7	

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.		α Serpentis.				ζ Ursæ Minoris.				β¹ Scorpii.			
		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
		15h 37m		6° 51′		15h 48m		78° 12′		15h 57m		19° 25′	
		s	s	″	″	s	s	″	″	s	s	″	″
Jan.	1	34.10	0.28	17.9	2.1	52.68	0.78	28.3	2.8	32.00	0.29	44.5	0.9
	11	34.38	0.30	15.8	1.9	53.46	0.91	25.5	2.3	32.29	0.31	45.4	1.0
	21	34.68	0.31	13.9	1.6	54.37	1.01	23.2	1.7	32.60	0.33	46.4	1.1
	31	34.99	0.30	12.3	1.4	55.38	1.09	21.5	1.0	32.93	0.33	47.5	1.1
Feb.	10	35.29	0.30	10.9	1.1	56.47	1.12	20.5	0.4	33.26	0.33	48.6	1.0
	20	35.59	0.29	9.8	0.7	57.59	1.09	20.1	0.3	33.59	0.31	49.6	1.0
March	1	35.88	0.26	9.1	0.4	58.68	1.03	20.4	1.0	33.90	0.30	50.6	0.9
	11	36.14	0.25	8.7	0.0	59.71	0.95	21.4	1.6	34.20	0.27	51.5	0.8
	21	36.39	0.23	8.7	0.4	60.66	0.84	23.0	2.0	34.47	0.26	52.3	0.6
	31	36.62	0.20	9.1	0.7	61.50	0.69	25.0	2.5	34.73	0.24	52.9	0.5
April	10	36.82	0.17	9.8	0.9	62.19	0.52	27.5	2.9	34.97	0.21	53.4	0.3
	20	36.99	0.15	10.7	1.0	62.71	0.34	30.4	3.2	35.18	0.18	53.7	0.3
	30	37.14	0.11	11.7	1.2	63.05	0.15	33.6	3.3	35.36	0.16	54.0	0.2
May	10	37.25	0.09	12.9	1.4	63.20	0.03	36.9	3.3	35.52	0.12	54.2	0.1
	20	37.34	0.05	14.3	1.5	63.17	0.21	40.2	3.2	35.64	0.09	54.3	0.0
	30	37.39	0.02	15.8	1.4	62.96	0.39	43.4	3.0	35.73	0.06	54.3	0.0
June	9	37.41	0.00	17.2	1.4	62.57	0.54	46.4	2.8	35.79	0.02	54.3	0.1
	19	37.41	0.03	18.6	1.2	62.03	0.69	49.2	2.4	35.81	0.01	54.2	0.1
	29	37.38	0.07	19.8	1.2	61.34	0.82	51.6	2.0	35.80	0.04	54.1	0.2
July	9	37.31	0.09	21.0	1.0	60.52	0.92	53.6	1.5	35.76	0.08	53.9	0.2
	19	37.22	0.12	22.0	0.8	59.60	1.01	55.1	1.0	35.68	0.11	53.7	0.3
	29	37.10	0.14	22.8	0.6	58.59	1.08	56.1	0.5	35.57	0.13	53.4	0.3
Aug.	8	36.96	0.15	23.4	0.5	57.51	1.10	56.6	0.0	35.44	0.15	53.1	0.3
	18	36.81	0.16	23.9	0.4	56.41	1.13	56.6	0.5	35.29	0.17	52.8	0.4
	28	36.65	0.16	24.3	0.1	55.28	1.11	56.1	1.0	35.12	0.17	52.4	0.4
Sept.	7	36.49	0.16	24.4	0.2	54.17	1.07	55.1	1.4	34.95	0.17	52.0	0.5
	17	36.33	0.15	24.2	0.4	53.10	1.00	53.7	2.0	34.78	0.16	51.5	0.5
	27	36.18	0.12	23.8	0.7	52.10	0.92	51.7	2.4	34.62	0.13	51.0	0.4
Oct.	7	36.06	0.08	23.1	0.9	51.18	0.80	49.3	2.8	34.49	0.10	50.6	0.4
	17	35.98	0.04	22.2	1.0	50.38	0.65	46.5	3.1	34.39	0.05	50.2	0.3
	27	35.94	0.00	21.2	1.3	49.73	0.48	43.4	3.4	34.34	0.01	49.9	0.2
Nov.	6	35.94	0.05	19.9	1.6	49.25	0.29	40.0	3.6	34.33	0.04	49.7	0.0
	16	35.99	0.09	18.3	1.8	48.96	0.10	36.4	3.7	34.37	0.10	49.7	0.1
	26	36.08	0.15	16.5	2.0	48.86	0.10	32.7	3.7	34.47	0.15	49.8	0.3
Dec.	6	36.23	0.20	14.5	2.2	48.96	0.31	29.0	3.6	34.62	0.20	50.1	0.6
	16	36.43	0.23	12.3	2.1	49.27	0.51	25.4	3.4	34.82	0.24	50.7	0.8
	26	36.66	0.27	10.2	2.0	49.78	0.69	22.0	3.0	35.06	0.27	51.5	0.8
	36	36.93		8.2		50.47		19.0		35.33		52.3	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	δ Ophiuchi.		α Scorpii. (*Antares.*)		η Draconis.	
	Right Ascension.	Dec. *South.*	Right Ascension.	Dec. *South.*	Right Ascension.	Dec. *North.*
	$16^{h}\ 7^{m}$	$3^{\circ}\ 20'$	$16^{h}\ 21^{m}$	$26^{\circ}\ 7'$	$16^{h}\ 22^{m}$	$61^{\circ}\ 49'$
	s s	″ ″	s s	″ ″	s s	″ ″
Jan. 1	13.10 0.27	27.7 1.6	4.28 0.29	31.7 0.5	7.42 0.35	14.0 3.2
11	13.37 0.29	29.3 1.5	4.57 0.32	32.2 0.6	7.77 0.41	10.8 2.8
21	13.66 0.29	30.8 1.5	4.89 0.33	32.8 0.7	8.18 0.46	8.0 2.1
31	13.95 0.30	32.3 1.3	5.22 0.34	33.5 0.7	8.64 0.50	5.9 1.7
Feb. 10	14.25 0.31	33.6 1.1	5.56 0.34	34.2 0.8	9.14 0.51	4.2 1.0
20	14.56 0.30	34.7 0.8	5.90 0.33	35.0 0.9	9.65 0.52	3.2 0.2
March 1	14.86 0.28	35.5 0.5	6.23 0.32	35.9 0.8	10.17 0.50	3.0 0.4
11	15.14 0.26	36.0 0.3	6.55 0.30	36.7 0.7	10.67 0.48	3.4 1.0
21	15.40 0.24	36.3 0.1	6.85 0.29	37.4 0.7	11.15 0.44	4.4 1.6
31	15.64 0.22	36.4 0.2	7.14 0.27	38.1 0.6	11.59 0.38	6.0 2.2
April 10	15.86 0.21	36.2 0.4	7.41 0.24	38.7 0.6	11.97 0.32	8.2 2.6
20	16.07 0.18	35.8 0.7	7.65 0.22	39.3 0.5	12.29 0.25	10.8 2.9
30	16.25 0.15	35.1 0.8	7.87 0.19	39.8 0.5	12.54 0.18	13.7 3.2
May 10	16.40 0.12	34.3 0.8	8.06 0.15	40.3 0.4	12.72 0.11	16.9 3.3
20	16.52 0.09	33.5 1.0	8.21 0.12	40.7 0.3	12.83 0.03	20.2 3.3
30	16.61 0.05	32.5 1.0	8.33 0.09	41.0 0.4	12.86 0.05	23.5 3.2
June 9	16.66 0.02	31.5 0.9	8.42 0.05	41.4 0.3	12.81 0.11	26.7 3.1
19	16.68 0.00	30.6 0.9	8.47 0.01	41.7 0.2	12.70 0.18	29.8 2.8
29	16.68 0.04	29.7 0.8	8.48 0.03	41.9 0.2	12.52 0.26	32.6 2.5
July 9	16.64 0.07	28.9 0.8	8.45 0.07	42.1 0.1	12.26 0.32	35.1 2.1
19	16.57 0.10	28.1 0.8	8.38 0.10	42.2 0.0	11.94 0.36	37.2 1.6
29	16.47 0.13	27.3 0.6	8.28 0.13	42.2 0.1	11.58 0.40	38.8 1.2
Aug. 8	16.34 0.15	26.7 0.5	8.15 0.16	42.1 0.1	11.18 0.42	40.0 0.7
18	16.19 0.16	26.2 0.4	7.99 0.18	42.0 0.3	10.76 0.44	40.7 0.2
28	16.03 0.17	25.8 0.2	7.81 0.18	41.7 0.4	10.32 0.46	40.9 0.3
Sept. 7	15.86 0.17	25.6 0.2	7.63 0.19	41.3 0.5	9.86 0.46	40.6 0.8
17	15.69 0.15	25.4 0.0	7.44 0.18	40.8 0.6	9.40 0.44	39.8 1.4
27	15.54 0.13	25.4 0.2	7.26 0.15	40.2 0.6	8.96 0.41	38.4 1.9
Oct. 7	15.41 0.10	25.6 0.4	7.11 0.12	39.6 0.6	8.55 0.36	36.5 2.3
17	15.31 0.07	26.0 0.5	6.99 0.08	39.0 0.6	8.19 0.28	34.2 2.7
27	15.24 0.02	26.5 0.7	6.91 0.03	38.4 0.6	7.91 0.22	31.5 3.0
Nov. 6	15.22 0.03	27.2 0.9	6.88 0.03	37.8 0.5	7.69 0.15	28.5 3.4
16	15.25 0.07	28.1 1.1	6.91 0.07	37.3 0.3	7.54 0.05	25.1 3.6
26	15.32 0.13	29.2 1.3	6.98 0.13	37.0 0.1	7.49 0.04	21.5 3.7
Dec. 6	15.45 0.17	30.5 1.5	7.11 0.18	36.9 0.0	7.53 0.13	17.8 3.6
16	15.62 0.22	32.0 1.6	7.29 0.24	36.9 0.2	7.66 0.23	14.2 3.6
26	15.84 0.25	33.6 1.6	7.53 0.28	37.1 0.4	7.89 0.31	10.6 3.4
36	16.09	35.2	7.81	37.5	8.20	7.2

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	*α* Trianguli Australis.		*ε* Ursæ Minoris		*α* Herculis	
	Right Ascension.	Dec. *South.*	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*
	$16^h\ 34^m$	$68^\circ\ 46'$	$16^h\ 59^m$	$82^\circ\ 15'$	$17^h\ 8^m$	$14^\circ\ 32'$
	s s	″ ″	s s	″ s	s s	″ ″
Jan. 1	16.94 0.61	7.3 1.6	49.64 0.68	15.5 3.2	26.30 0.21	52.5 2.3
11	17.55 0.67	5.7 1.3	50.32 0.97	12.3 2.9	26.51 0.24	50.2 2.1
21	18.22 0.71	4.4 0.8	51.29 1.20	9.4 2.3	26.75 0.26	48.1 1.8
31	18.93 0.75	3.6 0.4	52.49 1.39	7.1 1.9	27.01 0.28	46.3 1.6
Feb. 10	19.68 0.76	3.2 0.0	53.88 1.54	5.2 1.3	27.29 0.29	44.7 1.2
20	20.44 0.77	3.2 0.4	55.42 1.63	3.9 0.6	27.58 0.29	43.5 0.8
March 1	21.21 0.75	3.6 0.8	57.05 1.63	3.3 0.0	27.87 0.29	42.7 0.4
11	21.96 0.72	4.4 1.2	58.68 1.59	3.3 0.7	28.16 0.28	42.3 0.0
21	22.68 0.69	5.6 1.5	60.27 1.48	4.0 1.3	28.44 0.28	42.3 0.5
31	23.37 0.64	7.1 1.7	61.75 1.34	5.3 1.8	28.72 0.26	42.8 0.9
April 10	24.01 0.58	8.8 2.0	63.09 1.15	7.1 2.3	28.98 0.25	43.7 1.2
20	24.59 0.51	10.8 2.3	64.24 0.90	9.4 2.8	29.23 0.22	44.9 1.6
30	25.10 0.43	13.1 2.4	65.14 0.65	12.2 3.0	29.45 0.19	46.5 1.8
May 10	25.53 0.34	15.5 2.5	65.79 0.39	15.2 3.3	29.64 0.17	48.3 2.0
20	25.87 0.25	18.0 2.5	66.18 0.10	18.5 3.3	29.81 0.13	50.3 2.0
30	26.12 0.16	20.5 2.5	66.28 0.18	21.8 3.3	29.94 0.10	52.3 2.1
June 9	26.28 0.06	23.0 2.5	66.10 0.46	25.1 3.1	30.04 0.07	54.4 2.0
19	26.34 0.03	25.5 2.4	65.64 0.72	28.2 3.0	30.11 0.02	56.4 1.9
29	26.31 0.13	27.9 2.1	64.92 0.96	31.2 2.7	30.13 0.01	58.3 1.8
July 9	26.18 0.23	30.0 1.9	63.96 1.18	33.9 2.4	30.12 0.05	60.1 1.7
19	25.95 0.32	31.9 1.6	62.78 1.37	36.3 2.0	30.07 0.08	61.8 1.4
29	25.63 0.39	33.5 1.2	61.41 1.54	38.3 1.5	29.99 0.12	63.2 1.2
Aug. 8	25.24 0.45	34.7 0.7	59.87 1.66	39.8 1.0	29.87 0.15	64.4 0.9
18	24.79 0.50	35.4 0.3	58.21 1.74	40.8 0.6	29.72 0.17	65.3 0.7
28	24.29 0.53	35.7 0.2	56.47 1.80	41.4 0.0	29.55 0.18	66.0 0.4
Sept. 7	23.76 0.52	35.5 0.7	54.67 1.81	41.4 0.4	29.37 0.20	66.4 0.1
17	23.24 0.49	34.8 1.2	52.86 1.78	41.0 0.9	29.17 0.19	66.5 0.3
27	22.75 0.44	33.6 1.5	51.08 1.70	40.1 1.4	28.98 0.17	66.2 0.6
Oct. 7	22.31 0.36	32.1 1.9	49.38 1.58	38.7 1.8	28.81 0.15	65.6 0.8
17	21.95 0.27	30.2 2.3	47.80 1.43	36.9 2.4	28.66 0.13	64.8 1.1
27	21.68 0.17	27.9 2.5	46.37 1.23	34.5 2.8	28.53 0.09	63.7 1.3
Nov. 6	21.51 0.05	25.4 2.6	45.14 0.99	31.7 3.1	28.44 0.04	62.4 1.7
16	21.46 0.07	22.8 2.6	44.15 0.72	28.6 3.1	28.40 0.00	60.7 1.9
26	21.53 0.21	20.2 2.6	43.43 0.42	25.5 3.4	28.40 0.04	58.8 2.1
Dec. 6	21.74 0.34	17.6 2.4	43.01 0.10	22.1 3.6	28.44 0.11	56.7 2.3
16	22.08 0.45	15.2 2.1	42.91 0.21	18.5 3.5	28.55 0.15	54.4 2.3
26	22.53 0.55	13.1 1.8	43.12 0.53	15.0 3.4	28.70 0.18	52.1 2.3
36	23.08	11.3	43.65	11.6	28.88	49.8

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Draconis.		α Ophiuchi.		γ Draconis.	
	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*
	17h 27m	52° 23′	17h 28m	12° 39′	17h 53m	51° 30′
	s s	″ ″	s s	″ ″	s s	″ ″
Jan. 1	19.87 0.20	70.6 3.5	36.81 0.20	43.8 2.1	25.21 0.17	22.9 3.3
11	20.07 0.26	67.1 3.1	37.01 0.22	41.7 2.0	25.38 0.22	19.6 3.2
21	20.33 0.32	64.0 2.7	37.23 0.25	39.7 1.8	25.60 0.28	16.4 3.0
31	20.65 0.36	61.3 2.3	37.48 0.27	37.9 1.6	25.88 0.33	13.4 2.5
Feb. 10	21.01 0.39	59.0 1.6	37.75 0.28	36.3 1.3	26.21 0.36	10.9 1.9
20	21.40 0.40	57.4 1.1	38.03 0.29	35.0 0.8	26.57 0.38	9.0 1.3
March 1	21.80 0.41	56.3 0.4	38.32 0.29	34.2 0.4	26.95 0.40	7.7 0.7
11	22.21 0.41	55.9 0.2	38.61 0.28	33.8 0.0	27.35 0.41	7.0 0.1
21	22.62 0.39	56.1 0.8	38.89 0.28	33.8 0.4	27.76 0.39	6.9 0.6
31	23.01 0.36	56.9 1.5	39.17 0.26	34.2 0.8	28.15 0.38	7.5 1.2
April 10	23.37 0.34	58.4 2.0	39.43 0.25	35.0 1.2	28.53 0.35	8.7 1.8
20	23.71 0.30	60.4 2.4	39.68 0.24	36.2 1.4	28.88 0.32	10.5 2.3
30	24.01 0.26	62.8 2.8	39.92 0.21	37.6 1.7	29.20 0.29	12.8 2.7
May 10	24.27 0.20	65.6 3.1	40.13 0.19	39.3 1.9	29.49 0.24	15.5 3.0
20	24.47 0.15	68.7 3.3	40.32 0.15	41.2 2.0	29.73 0.18	18.5 3.1
30	24.62 0.10	72.0 3.3	40.47 0.12	43.2 2.0	29.91 0.13	21.6 3.3
June 9	24.72 0.03	75.3 3.3	40.59 0.08	45.2 2.0	30.04 0.08	24.9 3.4
19	24.75 0.03	78.6 3.2	40.67 0.05	47.2 1.9	30.12 0.01	28.3 3.3
29	24.72 0.10	81.8 3.0	40.72 0.01	49.1 1.8	30.13 0.05	31.6 3.1
July 9	24.62 0.15	84.8 2.7	40.73 0.03	50.9 1.6	30.08 0.11	34.7 2.9
19	24.47 0.19	87.5 2.4	40.70 0.07	52.5 1.5	29.97 0.16	37.6 2.6
29	24.28 0.24	89.9 2.0	40.63 0.11	54.0 1.2	29.81 0.22	40.2 2.3
Aug. 8	24.04 0.29	91.9 1.6	40.52 0.13	55.2 1.0	29.59 0.26	42.5 1.9
18	23.75 0.31	93.5 1.1	40.39 0.16	56.2 0.8	29.33 0.29	44.4 1.4
28	23.44 0.35	94.6 0.6	40.23 0.18	57.0 0.4	29.04 0.33	45.8 0.9
Sept. 7	23.09 0.35	95.2 0.1	40.05 0.19	57.4 0.2	28.71 0.35	46.7 0.4
17	22.74 0.36	95.3 0.4	39.86 0.19	57.6 0.1	28.36 0.35	47.1 0.0
27	22.38 0.35	94.9 0.9	39.67 0.18	57.5 0.4	28.01 0.34	47.1 0.5
Oct. 7	22.03 0.32	94.0 1.4	39.49 0.16	57.1 0.7	27.67 0.32	46.6 1.1
17	21.71 0.28	92.6 1.8	39.33 0.14	56.4 1.0	27.35 0.30	45.5 1.5
27	21.43 0.23	90.8 2.4	39.19 0.10	55.4 1.2	27.05 0.26	44.0 2.0
Nov. 6	21.20 0.18	88.4 2.8	39.09 0.06	54.2 1.5	26.79 0.20	42.0 2.5
16	21.02 0.11	85.6 2.9	39.03 0.01	52.7 1.7	26.59 0.15	39.5 2.9
26	20.91 0.05	82.7 3.3	39.02 0.03	51.0 2.0	26.44 0.08	36.6 3.2
Dec. 6	20.86 0.03	79.4 3.5	39.05 0.08	49.0 2.1	26.36 0.01	33.4 3.4
16	20.89 0.10	75.9 3.6	39.13 0.13	46.9 2.2	26.35 0.06	30.0 3.3
26	20.99 0.17	72.3 3.4	39.26 0.18	44.7 2.2	26.41 0.13	26.7 3.4
36	21.16	68.9	39.44	42.5	26.54	23.3

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	σ Octantis.				μ¹ Sagittarii.				α Lyræ. (*Vega.*)			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	17h		89° 16′		18h 5m		21° 5′		18h 32m		38° 39′	
	m s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	54 15.04	9.47	33.4	3.0	37.34	0.20	22.4	0.1	18.94	0.12	36.3	3.1
11	54 24.51	12.35	30.4	2.8	37.54	0.22	22.5	0.2	19.06	0.16	33.2	3.0
21	54 36.86	14.85	27.6	2.5	37.76	0.25	22.7	0.2	19.22	0.21	30.2	2.7
31	54 51.71	16.91	25.1	2.1	38.01	0.28	22.9	0.2	19.43	0.24	27.5	2.5
Feb. 10	55 8.62	18.52	23.0	1.6	38.29	0.29	23.1	0.2	19.67	0.28	25.0	2.0
20	55 27.14	19.66	21.4	1.1	38.58	0.30	23.3	0.1	19.95	0.30	23.0	1.4
March 1	55 46.80	20.32	20.3	0.6	38.88	0.31	23.4	0.0	20.25	0.32	21.6	1.0
11	56 7.12	20.50	19.7	0.1	39.19	0.31	23.4	0.1	20.57	0.33	20.6	0.4
21	56 27.62	20.25	19.6	0.3	39.50	0.30	23.3	0.2	20.90	0.34	20.2	0.2
31	56 47.87	19.58	19.9	0.8	39.80	0.30	23.1	0.2	21.24	0.33	20.4	0.8
April 10	57 7.45	18.49	20.7	1.3	40.10	0.30	22.9	0.3	21.57	0.32	21.2	1.4
20	57 25.94	17.01	22.0	1.6	40.40	0.29	22.6	0.4	21.89	0.31	22.6	1.9
30	57 42.95	15.19	23.6	2.0	40.69	0.27	22.2	0.4	22.20	0.28	24.5	2.3
May 10	57 58.14	13.05	25.6	2.4	40.96	0.24	21.8	0.4	22.48	0.25	26.8	2.6
20	58 11.19	10.62	28.0	2.7	41.20	0.21	21.4	0.3	22.73	0.22	29.4	2.9
30	58 21.81	7.95	30.7	2.9	41.41	0.18	21.1	0.3	22.95	0.18	32.3	3.1
June 9	58 29.76	5.10	33.6	3.0	41.59	0.15	20.8	0.3	23.13	0.13	35.4	3.1
19	58 34.86	2.15	36.6	3.0	41.74	0.11	20.5	0.2	23.26	0.09	38.5	3.1
29	58 37.01	0.88	39.6	3.0	41.85	0.07	20.3	0.1	23.35	0.04	41.6	3.1
July 9	58 36.13	3.89	42.6	2.9	41.92	0.02	20.2	0.1	23.39	0.02	44.7	2.9
19	58 32.24	6.76	45.5	2.8	41.94	0.02	20.1	0.0	23.37	0.07	47.6	2.6
29	58 25.48	9.44	48.3	2.4	41.92	0.06	20.1	0.0	23.30	0.11	50.2	2.4
Aug. 8	58 16.04	11.83	50.7	2.0	41.86	0.11	20.1	0.0	23.19	0.16	52.6	2.1
18	58 4.21	13.80	52.7	1.5	41.75	0.15	20.1	0.1	23.03	0.20	54.7	1.7
28	57 50.41	15.32	54.2	1.0	41.60	0.17	20.2	0.0	22.83	0.22	56.4	1.3
Sept. 7	57 35.09	16.27	55.2	0.5	41.43	0.18	20.2	0.0	22.61	0.25	57.7	0.8
17	57 18.82	16.64	55.7	0.1	41.25	0.19	20.2	0.0	22.36	0.26	58.5	0.4
27	57 2.18	16.36	55.6	0.7	41.06	0.19	20.2	0.1	22.10	0.26	58.9	0.1
Oct. 7	56 45.82	15.45	54.9	1.4	40.87	0.17	20.1	0.0	21.84	0.25	58.8	0.5
17	56 30.37	13.90	53.5	1.9	40.70	0.15	20.1	0.2	21.59	0.24	58.3	1.0
27	56 16.47	11.78	51.6	2.3	40.55	0.11	19.9	0.1	21.35	0.21	57.3	1.4
Nov. 6	56 4.69	9.14	49.3	2.8	40.44	0.07	19.8	0.2	21.14	0.18	55.9	1.9
16	55 55.55	6.13	46.5	3.0	40.37	0.03	19.6	0.1	20.96	0.12	54.0	2.2
26	55 49.42	2.85	43.5	3.3	40.34	0.02	19.5	0.0	20.84	0.07	51.8	2.6
Dec. 6	55 46.57	0.57	40.2	3.4	40.36	0.07	19.5	0.0	20.77	0.02	49.2	2.9
16	55 47.14	4.00	36.8	3.2	40.43	0.12	19.5	0.1	20.75	0.03	46.3	3.0
26	55 51.14	7.30	33.6	3.3	40.55	0.16	19.6	0.1	20.78	0.08	43.3	3.2
36	55 58.44		30.3		40.71		19.7		20.86		40.1	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Lyræ.				ζ Aquilæ.				δ Aquilæ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	18h 45m		33° 12′		18h 59m		13° 39′		19h 18m		2° 50′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	2.57	0.10	29.5	3.0	8.90	0.11	56.2	2.0	37.97	0.09	52.7	1.5
11	2.67	0.15	26.5	2.8	9.01	0.14	54.2	1.9	38.06	0.13	51.2	1.3
21	2.82	0.19	23.7	2.6	9.15	0.17	52.3	1.9	38.19	0.16	49.9	1.0
31	3.01	0.22	21.1	2.4	9.32	0.20	50.4	1.6	38.35	0.19	48.9	1.0
Feb. 10	3.23	0.26	18.7	2.0	9.52	0.23	48.8	1.3	38.54	0.22	47.9	0.9
20	3.49	0.28	16.7	1.3	9.75	0.25	47.5	1.0	38.76	0.24	47.0	0.7
March 1	3.77	0.30	15.4	0.9	10.00	0.26	46.5	0.6	39.00	0.26	46.3	0.3
11	4.07	0.31	14.5	0.4	10.26	0.28	45.9	0.2	39.26	0.26	46.0	0.0
21	4.38	0.32	14.1	0.1	10.54	0.29	45.7	0.2	39.52	0.28	46.0	0.4
31	4.70	0.32	14.2	0.7	10.83	0.29	45.9	0.6	39.80	0.29	46.4	0.7
April 10	5.02	0.31	14.9	1.2	11.12	0.29	46.5	1.0	40.09	0.29	47.1	0.9
20	5.33	0.29	16.1	1.7	11.41	0.27	47.5	1.5	40.38	0.27	48.0	1.2
30	5.62	0.28	17.8	2.1	11.68	0.27	49.0	1.8	40.65	0.27	49.2	1.4
May 10	5.90	0.26	19.9	2.5	11.95	0.25	50.8	1.9	40.92	0.27	50.6	1.6
20	6.16	0.23	22.4	2.7	12.20	0.23	52.7	2.1	41.19	0.25	52.2	1.8
30	6.39	0.19	25.1	2.9	12.43	0.21	54.8	2.2	41.44	0.22	54.0	1.8
June 9	6.58	0.15	28.0	3.0	12.64	0.17	57.0	2.3	41.66	0.19	55.8	1.8
19	6.73	0.10	31.0	3.0	12.81	0.13	59.3	2.2	41.85	0.16	57.6	1.8
29	6.83	0.05	34.0	2.9	12.94	0.09	61.5	2.1	42.01	0.12	59.4	1.7
July 9	6.88	0.01	36.9	2.8	13.03	0.05	63.6	2.1	42.13	0.07	61.1	1.6
19	6.89	0.04	39.7	2.6	13.08	0.00	65.7	1.9	42.20	0.03	62.7	1.3
29	6.85	0.08	42.3	2.4	13.08	0.04	67.6	1.7	42.23	0.01	64.0	1.2
Aug. 8	6.77	0.13	44.7	2.0	13.04	0.09	69.3	1.4	42.22	0.06	65.2	1.0
18	6.64	0.17	46.7	1.7	12.95	0.12	70.7	1.2	42.16	0.09	66.2	0.9
28	6.47	0.20	48.4	1.3	12.83	0.15	71.9	0.9	42.07	0.13	67.1	0.7
Sept. 7	6.27	0.22	49.7	0.9	12.68	0.17	72.8	0.6	41.94	0.16	67.8	0.4
17	6.05	0.23	50.6	0.4	12.51	0.19	73.4	0.3	41.78	0.17	68.2	0.2
27	5.82	0.24	51.0	0.0	12.32	0.19	73.7	0.0	41.61	0.18	68.4	0.1
Oct. 7	5.58	0.24	51.0	0.4	12.13	0.18	73.7	0.2	41.43	0.18	68.5	0.2
17	5.34	0.21	50.6	0.8	11.95	0.18	73.5	0.5	41.25	0.16	68.3	0.4
27	5.13	0.19	49.8	1.2	11.77	0.15	73.0	0.9	41.09	0.14	67.9	0.6
Nov. 6	4.94	0.17	48.6	1.6	11.62	0.12	72.1	1.1	40.95	0.12	67.3	0.8
16	4.77	0.12	47.0	2.1	11.50	0.09	71.0	1.4	40.83	0.09	66.5	0.9
26	4.65	0.07	44.9	2.4	11.41	0.05	69.6	1.6	40.74	0.05	65.6	1.1
Dec. 6	4.58	0.02	42.5	2.7	11.36	0.00	68.0	1.8	40.69	0.01	64.5	1.2
16	4.56	0.03	39.8	2.8	11.36	0.04	66.2	1.9	40.68	0.03	63.3	1.3
26	4.59	0.07	37.0	2.9	11.40	0.08	64.3	2.0	40.71	0.07	62.0	1.3
36	4.66		34.1		11.48		62.3		40.78		60.7	

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 6h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ Aquilæ.				α Aquilæ. (*Altair.*)				β Aquilæ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	19h 39m		10° 17′		19h 44m		8° 30′		19h 48m		6° 4′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	47.13	0.07	9.9	1.7	8.38	0.07	48.1	1.6	37.49	0.07	16.0	1.5
11	47.20	0.11	8.2	1.7	8.45	0.10	46.5	1.5	37.56	0.10	14.5	1.5
21	47.31	0.14	6.5	1.6	8.55	0.14	45.0	1.5	37.66	0.13	13.0	1.3
31	47.45	0.17	4.9	1.4	8.69	0.17	43.5	1.3	37.79	0.16	11.7	1.1
Feb. 10	47.62	0.19	3.5	1.1	8.86	0.19	42.2	1.1	37.95	0.19	10.6	0.9
20	47.81	0.22	2.4	0.9	9.05	0.22	41.1	0.8	38.14	0.21	9.7	0.8
March 1	48.03	0.24	1.5	0.5	9.27	0.24	40.3	0.5	38.35	0.24	8.9	0.5
11	48.27	0.26	1.0	0.2	9.51	0.26	39.8	0.2	38.59	0.25	8.4	0.1
21	48.53	0.28	0.8	0.1	9.77	0.27	39.6	0.2	38.84	0.27	8.3	0.3
31	48.81	0.28	0.9	0.6	10.04	0.29	39.8	0.7	39.11	0.29	8.6	0.7
April 10	49.09	0.29	1.5	1.0	10.33	0.29	40.5	1.0	39.40	0.29	9.3	1.0
20	49.38	0.30	2.5	1.3	10.62	0.29	41.5	1.3	39.69	0.29	10.3	1.2
30	49.68	0.28	3.8	1.6	10.91	0.28	42.8	1.6	39.98	0.29	11.5	1.5
May 10	49.96	0.27	5.4	1.8	11.19	0.27	44.4	1.8	40.27	0.27	13.0	1.7
20	50.23	0.25	7.2	2.0	11.46	0.26	46.2	2.0	40.54	0.26	14.7	1.8
30	50.48	0.23	9.2	2.1	11.72	0.24	48.2	2.1	40.80	0.24	16.5	2.0
June 9	50.71	0.20	11.3	2.2	11.96	0.21	50.3	2.1	41.04	0.21	18.5	2.0
19	50.91	0.18	13.5	2.2	12.17	0.18	52.4	2.1	41.25	0.18	20.5	2.0
29	51.09	0.14	15.7	2.1	12.35	0.14	54.5	2.0	41.43	0.14	22.5	1.9
July 9	51.23	0.09	17.8	2.0	12.49	0.09	56.5	1.9	41.57	0.10	24.4	1.8
19	51.32	0.04	19.8	1.8	12.58	0.05	58.4	1.8	41.67	0.06	26.2	1.6
29	51.36	0.00	21.6	1.6	12.63	0.00	60.2	1.6	41.73	0.01	27.8	1.5
Aug. 8	51.36	0.05	23.2	1.5	12.63	0.04	61.8	1.4	41.74	0.04	29.3	1.3
18	51.31	0.09	24.7	1.2	12.59	0.08	63.2	1.1	41.70	0.07	30.6	1.0
28	51.22	0.12	25.9	1.0	12.51	0.11	64.3	0.9	41.63	0.11	31.6	0.8
Sept. 7	51.10	0.15	26.9	0.7	12.40	0.14	65.2	0.7	41.52	0.14	32.4	0.6
17	50.95	0.17	27.6	0.4	12.26	0.17	65.9	0.4	41.38	0.17	33.0	0.3
27	50.78	0.18	28.0	0.2	12.09	0.18	66.3	0.2	41.21	0.17	33.3	0.1
Oct. 7	50.60	0.18	28.2	0.1	11.91	0.18	66.5	0.1	41.04	0.18	33.4	0.1
17	50.42	0.17	28.1	0.4	11.73	0.17	66.4	0.3	40.86	0.17	33.3	0.4
27	50.25	0.15	27.7	0.6	11.56	0.16	66.1	0.6	40.69	0.15	32.9	0.6
Nov. 6	50.10	0.14	27.1	0.8	11.40	0.13	65.5	0.8	40.54	0.13	32.3	0.7
16	49.96	0.11	26.3	1.1	11.27	0.10	64.7	1.0	40.41	0.11	31.6	0.9
26	49.85	0.07	25.2	1.3	11.17	0.07	63.7	1.2	40.30	0.08	30.7	1.1
Dec. 6	49.78	0.03	23.9	1.5	11.10	0.03	62.5	1.3	40.22	0.03	29.6	1.3
16	49.75	0.00	22.4	1.6	11.07	0.00	61.2	1.5	40.19	0.00	28.3	1.4
26	49.75	0.05	20.8	1.7	11.07	0.04	59.7	1.6	40.19	0.04	26.9	1.5
36	49.80		19.1		11.11		58.1		40.23		25.4	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	λ Ursæ Minoris.				α² Capricorni.				α Pavonis.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	19h		88° 53′		20h 10m		12° 57′		20h 14m		57° 9′	
	m s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	58 52.87	4.49	79.9	3.1	30.00	0.06	46.5	0.3	51.20	0.05	59.8	2.3
11	58 48.38	2.16	76.8	3.1	30.06	0.09	46.8	0.2	51.25	0.13	57.5	2.4
21	58 46.22	0.14	73.7	3.2	30.15	0.12	47.0	0.1	51.38	0.18	55.1	2.5
31	58 46.36	2.38	70.5	3.1	30.27	0.15	47.1	0.0	51.56	0.24	52.6	2.4
Feb. 10	58 48.74	4.52	67.4	2.9	30.42	0.18	47.1	0.1	51.80	0.30	50.2	2.4
20	58 53.26	6.49	64.5	2.6	30.60	0.21	47.0	0.2	52.10	0.35	47.8	2.3
March 1	58 59.75	8.15	61.9	2.2	30.81	0.23	46.8	0.4	52.45	0.39	45.5	2.1
11	59 7.90	9.47	59.7	1.7	31.04	0.25	46.4	0.6	52.84	0.43	43.4	1.9
21	59 17.37	10.40	58.0	1.1	31.29	0.27	45.8	0.8	53.27	0.45	41.5	1.7
31	59 27.77	10.95	56.9	0.5	31.56	0.29	45.0	1.0	53.72	0.48	39.8	1.5
April 10	59 38.72	11.07	56.4	0.1	31.85	0.30	44.0	1.1	54.20	0.50	38.3	1.2
20	59 49.79	10.77	56.5	0.6	32.15	0.30	42.9	1.2	54.70	0.51	37.1	0.9
30	60 0.56	10.11	57.1	1.2	32.45	0.30	41.7	1.3	55.21	0.50	36.2	0.5
May 10	60 10.67	9.13	58.3	1.8	32.75	0.30	40.4	1.4	55.71	0.50	35.7	0.2
20	60 19.80	7.86	60.1	2.3	33.05	0.28	39.0	1.3	56.21	0.48	35.5	0.1
30	60 27.66	6.36	62.4	2.7	33.33	0.27	37.7	1.3	56.69	0.44	35.6	0.5
June 9	60 34.02	4.67	65.1	3.0	33.60	0.25	36.4	1.2	57.13	0.39	36.1	0.8
19	60 38.69	2.86	68.1	3.1	33.85	0.21	35.2	1.1	57.52	0.35	36.9	1.2
29	60 41.55	0.99	71.2	3.4	34.06	0.17	34.1	0.9	57.87	0.29	38.1	1.5
July 9	60 42.54	0.88	74.6	3.4	34.23	0.14	33.2	0.8	58.16	0.21	39.6	1.6
19	60 41.66	2.74	78.0	3.4	34.37	0.09	32.4	0.6	58.37	0.13	41.2	1.8
29	60 38.92	4.53	81.4	3.4	34.46	0.04	31.8	0.4	58.50	0.05	43.0	1.9
Aug. 8	60 34.39	6.21	84.8	3.2	34.50	0.01	31.4	0.3	58.55	0.02	44.9	2.0
18	60 28.18	7.77	88.0	2.9	34.49	0.05	31.1	0.2	58.53	0.10	46.9	2.0
28	60 20.41	9.17	90.9	2.7	34.44	0.09	30.9	0.0	58.43	0.17	48.9	1.8
Sept. 7	60 11.24	10.40	93.6	2.3	34.35	0.12	30.9	0.1	58.26	0.24	50.7	1.7
17	60 0.84	11.40	95.9	1.9	34.23	0.15	31.0	0.2	58.02	0.28	52.4	1.4
27	59 49.44	12.15	97.8	1.5	34.08	0.17	31.2	0.3	57.74	0.32	53.8	1.0
Oct. 7	59 37.29	12.67	99.3	1.0	33.91	0.17	31.5	0.3	57.42	0.34	54.8	0.7
17	59 24.62	12.93	100.3	0.5	33.74	0.17	31.8	0.4	57.08	0.33	55.5	0.3
27	59 11.69	12.86	100.8	0.0	33.57	0.16	32.2	0.3	56.75	0.32	55.8	0.2
Nov. 6	58 58.83	12.46	100.8	0.6	33.41	0.14	32.5	0.4	56.43	0.30	55.6	0.6
16	58 46.37	11.74	100.2	1.1	33.27	0.11	32.9	0.4	56.13	0.25	55.0	1.0
26	58 34.63	10.69	99.1	1.7	33.16	0.07	33.3	0.4	55.88	0.19	54.0	1.4
Dec. 6	58 23.94	9.31	97.4	2.1	33.09	0.04	33.7	0.4	55.69	0.14	52.6	1.6
16	58 14.63	7.60	95.3	2.6	33.05	0.01	34.1	0.3	55.55	0.06	51.0	2.0
26	58 7.03	5.63	92.7	2.9	33.04	0.03	34.4	0.4	55.49	0.01	49.0	2.2
36	58 1.40		89.8		33.07		34.8		55.50		46.8	

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Cygni.		61¹ Cygni.		ζ Cygni.	
	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*
	$20^{h}\ 36^{m}$	$44^{\circ}\ 47'$	$21^{h}\ 0^{m}$	$38^{\circ}\ 4'$	$21^{h}\ 7^{m}$	$29^{\circ}\ 40'$
	s s	" "	s s	" "	s s	" "
Jan. 1	46.91 0.05	58.2 2.8	47.43 0.05	70.7 2.4	8.54 0.04	27.0 2.2
11	46.86 0.00	55.4 2.9	47.38 0.00	68.3 2.5	8.50 0.00	24.8 2.3
21	46.86 0.06	52.5 3.0	47.38 0.04	65.8 2.6	8.50 0.04	22.5 2.4
31	46.92 0.11	49.5 2.9	47.42 0.09	63.2 2.5	8.54 0.07	20.1 2.3
Feb. 10	47.03 0.15	46.6 2.6	47.51 0.13	60.7 2.4	8.61 0.11	17.8 2.1
20	47.18 0.20	44.0 2.3	47.64 0.17	58.3 2.1	8.72 0.15	15.7 1.8
March 1	47.38 0.24	41.7 2.0	47.81 0.21	56.2 1.8	8.87 0.18	13.9 1.5
11	47.62 0.28	39.7 1.4	48.02 0.26	54.4 1.3	9.05 0.22	12.4 1.1
21	47.90 0.32	38.3 0.9	48.28 0.29	53.1 0.8	9.27 0.26	11.3 0.7
31	48.22 0.34	37.4 0.4	48.57 0.31	52.3 0.3	9.53 0.28	10.6 0.2
April 10	48.56 0.36	37.0 0.2	48.88 0.34	52.0 0.3	9.81 0.30	10.4 0.4
20	48.92 0.38	37.2 0.9	49.22 0.35	52.3 0.8	10.11 0.32	10.8 0.8
30	49.30 0.38	38.1 1.4	49.57 0.36	53.1 1.4	10.43 0.32	11.6 1.3
May 10	49.68 0.36	39.5 1.9	49.93 0.35	54.5 1.8	10.75 0.32	12.9 1.7
20	50.04 0.34	41.4 2.3	50.28 0.35	56.3 2.2	11.07 0.32	14.6 2.1
30	50.38 0.31	43.7 2.7	50.63 0.32	58.5 2.6	11.39 0.30	16.7 2.4
June 9	50.69 0.28	46.4 3.0	50.95 0.29	61.1 2.9	11.69 0.27	19.1 2.7
19	50.97 0.24	49.4 3.3	51.24 0.26	64.0 3.1	11.96 0.25	21.8 2.8
29	51.21 0.19	52.7 3.3	51.50 0.22	67.1 3.2	12.21 0.21	24.6 2.9
July 9	51.40 0.13	56.0 3.3	51.72 0.17	70.3 3.3	12.42 0.17	27.5 3.0
19	51.53 0.07	59.3 3.3	51.89 0.13	73.6 3.3	12.59 0.12	30.5 2.9
29	51.60 0.02	62.6 3.2	52.02 0.08	76.9 3.2	12.71 0.07	33.4 2.8
Aug. 8	51.62 0.04	65.8 3.1	52.10 0.02	80.1 3.0	12.78 0.02	36.2 2.6
18	51.58 0.09	68.9 2.9	52.12 0.05	83.1 2.8	12.80 0.02	38.8 2.4
28	51.49 0.14	71.8 2.6	52.07 0.09	85.9 2.6	12.78 0.07	41.2 2.2
Sept. 7	51.35 0.19	74.4 2.1	51.98 0.12	88.5 2.2	12.71 0.11	43.4 1.8
17	51.16 0.22	76.5 1.7	51.86 0.16	90.7 1.9	12.60 0.14	45.2 1.5
27	50.94 0.24	78.2 1.3	51.70 0.19	92.6 1.5	12.46 0.17	46.7 1.2
Oct. 7	50.70 0.26	79.5 0.9	51.51 0.21	94.1 1.0	12.29 0.19	47.9 0.8
17	50.44 0.27	80.4 0.5	51.30 0.21	95.1 0.6	12.10 0.19	48.7 0.3
27	50.17 0.27	80.9 0.1	51.09 0.22	95.7 0.2	11.91 0.19	49.0 0.0
Nov. 6	49.90 0.25	80.8 0.6	50.87 0.20	95.9 0.3	11.72 0.19	49.0 0.4
16	49.65 0.23	80.2 1.1	50.67 0.19	95.6 0.8	11.53 0.17	48.6 0.8
26	49.42 0.20	79.1 1.5	50.48 0.17	94.8 1.1	11.36 0.15	47.8 1.2
Dec. 6	49.22 0.17	77.6 2.0	50.31 0.14	93.7 1.6	11.21 0.12	46.6 1.5
16	49.05 0.12	75.6 2.4	50.17 0.11	92.1 2.0	11.09 0.10	45.1 1.9
26	48.93 0.07	73.2 2.7	50.06 0.06	90.1 2.3	10.99 0.06	43.2 2.1
36	48.86	70.5	50.00	87.8	10.93	41.1

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Cephei.		β Aquarii.		β Cephei.	
	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *South.*	Right Ascension.	Dec. *North.*
	21h 15m	62° 0′	21h 24m	6° 9′	21h 26m	69° 57′
	s s	″ ″	s s	″ ″	s s	″ ″
Jan. 1	18.53 0.21	54.4 2.7	23.63 0.01	58.1 0.6	51.65 0.34	70.2 2.6
11	18.32 0.12	51.7 2.9	23.62 0.01	58.7 0.5	51.31 0.25	67.6 2.9
21	18.20 0.05	48.8 3.2	23.63 0.04	59.2 0.4	51.06 0.14	64.7 3.1
31	18.15 0.03	45.6 3.2	23.67 0.07	59.6 0.3	50.92 0.02	61.6 3.2
Feb. 10	18.18 0.12	42.4 3.2	23.74 0.11	59.9 0.1	50.90 0.10	58.4 3.2
20	18.30 0.19	39.2 3.0	23.85 0.14	60.0 0.1	51.00 0.21	55.2 3.2
March 1	18.49 0.27	36.2 2.6	23.99 0.16	59.9 0.3	51.21 0.32	52.0 2.8
11	18.76 0.34	33.6 2.2	24.15 0.19	59.6 0.5	51.53 0.42	49.2 2.5
21	19.10 0.40	31.4 1.7	24.34 0.22	59.1 0.8	51.95 0.51	46.7 2.0
31	19.50 0.45	29.7 1.0	24.56 0.25	58.3 1.0	52.46 0.58	44.7 1.3
April 10	19.95 0.49	28.7 0.5	24.81 0.27	57.3 1.2	53.04 0.64	43.4 0.8
20	20.44 0.53	28.2 0.1	25.08 0.29	56.1 1.4	53.68 0.67	42.6 0.2
30	20.97 0.53	28.3 0.7	25.37 0.29	54.7 1.6	54.35 0.69	42.4 0.5
May 10	21.50 0.52	29.0 1.3	25.66 0.30	53.1 1.7	55.04 0.69	42.9 1.0
20	22.02 0.50	30.3 1.9	25.96 0.31	51.4 1.7	55.73 0.67	43.9 1.6
30	22.52 0.46	32.2 2.4	26.27 0.29	49.7 1.8	56.40 0.62	45.5 2.1
June 9	22.98 0.42	34.6 2.8	26.56 0.28	47.9 1.7	57.02 0.55	47.6 2.6
19	23.40 0.36	37.4 3.1	26.84 0.26	46.2 1.7	57.57 0.48	50.2 3.0
29	23.76 0.30	40.5 3.4	27.10 0.23	44.5 1.5	58.05 0.39	53.2 3.3
July 9	24.06 0.22	43.9 3.6	27.33 0.19	43.0 1.4	58.44 0.29	56.5 3.5
19	24.28 0.14	47.5 3.6	27.52 0.15	41.6 1.2	58.73 0.19	60.0 3.7
29	24.42 0.06	51.1 3.6	27.67 0.10	40.4 1.0	58.92 0.08	63.7 3.7
Aug. 8	24.48 0.02	54.7 3.5	27.77 0.06	39.4 0.8	59.00 0.02	67.4 3.7
18	24.46 0.09	58.2 3.5	27.83 0.02	38.6 0.5	58.98 0.13	71.1 3.6
28	24.37 0.17	61.7 3.3	27.85 0.03	38.1 0.3	58.85 0.23	74.7 3.4
Sept. 7	24.20 0.25	65.0 2.9	27.82 0.07	37.8 0.2	58.62 0.32	78.1 3.2
17	23.95 0.30	67.9 2.6	27.75 0.09	37.6 0.0	58.30 0.40	81.3 2.8
27	23.65 0.35	70.5 2.2	27.66 0.12	37.6 0.2	57.90 0.47	84.1 2.5
Oct. 7	23.30 0.38	72.7 1.7	27.54 0.14	37.8 0.3	57.43 0.53	86.6 2.1
17	22.92 0.41	74.4 1.2	27.40 0.15	38.1 0.3	56.90 0.57	88.7 1.5
27	22.51 0.42	75.6 0.7	27.25 0.15	38.4 0.5	56.33 0.60	90.2 1.0
Nov. 6	22.09 0.43	76.3 0.1	27.10 0.14	38.9 0.5	55.73 0.60	91.2 0.5
16	21.66 0.41	76.4 0.5	26.96 0.14	39.4 0.6	55.13 0.60	91.7 0.2
26	21.25 0.38	75.9 1.0	26.82 0.12	40.0 0.6	54.53 0.57	91.5 0.7
Dec. 6	20.87 0.35	74.9 1.7	26.70 0.09	40.6 0.7	53.96 0.53	90.8 1.4
16	20.52 0.30	73.2 2.1	26.61 0.06	41.3 0.6	53.43 0.47	89.4 1.9
26	20.22 0.24	71.1 2.6	26.55 0.03	41.9 0.7	52.96 0.39	87.5 2.4
36	19.98	68.5	26.52	42.6	52.57	85.1

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	ε Pegasi.		α Aquarii.		α Gruis.	
	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *South.*	Right Ascension.	Dec. *South.*
	21h 37m	9° 15′	21h 58m	0° 58′	21h 59m	47° 36′
	s s	″ ″	s s	″ ″	s s	″ ″
Jan. 1	30.33 0.04	19.8 1.3	47.84 0.05	39.8 0.8	38.24 0.09	67.5 1.5
11	30.29 0.01	18.5 1.3	47.79 0.02	40.6 0.7	38.15 0.05	66.0 1.7
21	30.28 0.02	17.2 1.3	47.77 0.01	41.3 0.7	38.10 0.00	64.3 2.0
31	30.30 0.05	15.9 1.2	47.78 0.03	42.0 0.6	38.10 0.05	62.3 2.3
Feb. 10	30.35 0.09	14.7 0.9	47.81 0.07	42.6 0.4	38.15 0.09	60.0 2.4
20	30.44 0.13	13.8 0.8	47.88 0.11	43.0 0.1	38.24 0.13	57.6 2.4
March 1	30.57 0.15	13.0 0.6	47.99 0.13	43.1 0.0	38.37 0.17	55.2 2.6
11	30.72 0.18	12.4 0.2	48.12 0.16	43.1 0.3	38.54 0.22	52.6 2.6
21	30.90 0.20	12.2 0.1	48.28 0.19	42.8 0.5	38.76 0.27	50.0 2.5
31	31.10 0.23	12.3 0.4	48.47 0.22	42.3 0.8	39.03 0.30	47.5 2.5
April 10	31.33 0.27	12.7 0.8	48.69 0.25	41.5 1.1	39.33 0.34	45.0 2.4
20	31.60 0.29	13.5 1.1	48.94 0.27	40.4 1.4	39.67 0.37	42.6 2.1
30	31.89 0.30	14.6 1.4	49.21 0.29	39.0 1.6	40.04 0.40	40.5 1.9
May 10	32.19 0.30	16.0 1.7	49.50 0.30	37.4 1.7	40.44 0.41	38.6 1.6
20	32.49 0.30	17.7 1.9	49.80 0.30	35.7 1.9	40.85 0.41	37.0 1.3
30	32.79 0.29	19.6 2.1	50.10 0.30	33.8 1.9	41.26 0.42	35.7 1.0
June 9	33.08 0.27	21.7 2.2	50.40 0.29	31.9 1.9	41.68 0.40	34.7 0.6
19	33.35 0.26	23.9 2.2	50.69 0.27	30.0 2.0	42.08 0.38	34.1 0.1
29	33.61 0.24	26.1 2.2	50.96 0.25	28.0 1.9	42.46 0.34	34.0 0.2
July 9	33.85 0.20	28.3 2.2	51.21 0.21	26.1 1.7	42.80 0.29	34.2 0.6
19	34.05 0.15	30.5 2.0	51.42 0.18	24.4 1.5	43.09 0.25	34.8 0.9
29	34.20 0.11	32.5 1.9	51.60 0.14	22.9 1.3	43.34 0.20	35.7 1.2
Aug. 8	34.31 0.07	34.4 1.7	51.74 0.09	21.6 1.1	43.54 0.13	36.9 1.5
18	34.38 0.02	36.1 1.4	51.83 0.05	20.5 0.9	43.67 0.06	38.4 1.8
28	34.40 0.02	37.5 1.2	51.88 0.01	19.6 0.7	43.73 0.00	40.2 1.9
Sept. 7	34.38 0.06	38.7 1.0	51.89 0.03	18.9 0.5	43.73 0.07	42.1 2.0
17	34.32 0.09	39.7 0.7	51.86 0.08	18.4 0.2	43.66 0.12	44.1 1.9
27	34.23 0.12	40.4 0.5	51.78 0.10	18.2 0.1	43.54 0.16	46.0 1.8
Oct. 7	34.11 0.13	40.9 0.3	51.68 0.12	18.1 0.1	43.38 0.20	47.8 1.6
17	33.98 0.15	41.2 0.0	51.56 0.13	18.2 0.3	43.18 0.23	49.4 1.4
27	33.83 0.15	41.2 0.2	51.43 0.14	18.5 0.4	42.95 0.24	50.8 1.1
Nov. 6	33.68 0.14	41.0 0.5	51.29 0.14	18.9 0.5	42.71 0.24	51.9 0.7
16	33.54 0.14	40.5 0.6	51.15 0.13	19.4 0.6	42.47 0.24	52.6 0.2
26	33.40 0.13	39.9 0.9	51.02 0.12	20.0 0.7	42.23 0.22	52.8 0.1
Dec. 6	33.27 0.10	39.0 1.0	50.90 0.11	20.7 0.8	42.01 0.18	52.7 0.5
16	33.17 0.08	38.0 1.1	50.79 0.08	21.5 0.8	41.83 0.15	52.2 0.9
26	33.09 0.05	36.9 1.3	50.71 0.06	22.3 0.8	41.68 0.12	51.3 1.2
36	33.04	35.6	50.65	23.1	41.56	50.1

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	ζ Pegasi.				α Piscis Australis. (*Fomalhaut.*)				α Pegasi. (*Markab.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	22h 34m		10° 7′		22h 50m		30° 20′		22h 57m		14° 28′	
	s	s	″	″	s	s	″	″	s	s	″	″
Jan. 1	40.85	0.08	30.1	1.1	7.73	0.10	37.8	0.5	59.65	0.09	37.7	1.1
11	40.77	0.06	29.0	1.1	7.63	0.07	37.3	0.7	59.56	0.08	36.6	1.3
21	40.71	0.03	27.9	1.2	7.56	0.04	36.6	1.0	59.48	0.05	35.3	1.3
31	40.68	0.01	26.7	1.1	7.52	0.01	35.6	1.2	59.43	0.03	34.0	1.3
Feb. 10	40.67	0.02	25.6	0.9	7.51	0.01	34.4	1.4	59.40	0.00	32.7	1.2
20	40.69	0.08	24.7	0.9	7.52	0.05	33.0	1.7	59.40	0.03	31.5	1.0
March 1	40.77	0.10	23.8	0.6	7.57	0.09	31.3	1.8	59.43	0.07	30.5	0.8
11	40.87	0.12	23.2	0.3	7.66	0.12	29.5	2.0	59.50	0.11	29.7	0.6
21	40.99	0.16	22.9	0.1	7.78	0.16	27.5	2.1	59.61	0.14	29.1	0.3
31	41.15	0.20	22.8	0.3	7.94	0.20	25.4	2.2	59.75	0.18	28.8	0.0
April 10	41.35	0.23	23.1	0.7	8.14	0.23	23.2	2.3	59.93	0.22	28.8	0.4
20	41.58	0.26	23.8	1.0	8.37	0.27	20.9	2.3	60.15	0.25	29.2	0.8
30	41.84	0.28	24.8	1.3	8.64	0.30	18.6	2.3	60.40	0.27	30.0	1.1
May 10	42.12	0.30	26.1	1.5	8.94	0.32	16.3	2.0	60.67	0.30	31.1	1.4
20	42.42	0.30	27.6	1.8	9.26	0.34	14.3	1.9	60.97	0.30	32.5	1.6
30	42.72	0.31	29.4	2.0	9.60	0.34	12.4	1.8	61.27	0.31	34.1	1.9
June 9	43.03	0.30	31.4	2.1	9.94	0.34	10.6	1.5	61.58	0.31	36.0	2.1
19	43.33	0.29	33.5	2.2	10.28	0.34	9.1	1.2	61.89	0.31	38.1	2.3
29	43.62	0.27	35.7	2.2	10.62	0.32	7.9	0.9	62.20	0.29	40.4	2.3
July 9	43.89	0.24	37.9	2.2	10.94	0.27	7.0	0.6	62.49	0.25	42.7	2.3
19	44.13	0.20	40.1	2.1	11.21	0.25	6.4	0.2	62.74	0.22	45.0	2.2
29	44.33	0.16	42.2	1.9	11.46	0.21	6.2	0.2	62.96	0.19	47.2	2.2
Aug. 8	44.49	0.13	44.1	1.8	11.67	0.16	6.4	0.5	63.15	0.15	49.4	2.0
18	44.62	0.08	45.9	1.6	11.83	0.11	6.9	0.7	63.30	0.10	51.4	1.8
28	44.70	0.04	47.5	1.4	11.94	0.06	7.6	1.0	63.40	0.06	53.2	1.6
Sept. 7	44.74	0.00	48.9	1.1	12.00	0.02	8.6	1.2	63.46	0.02	54.8	1.4
17	44.74	0.04	50.0	0.9	12.02	0.03	9.8	1.4	63.48	0.02	56.2	1.2
27	44.70	0.07	50.9	0.6	11.99	0.07	11.2	1.5	63.46	0.05	57.4	0.9
Oct. 7	44.63	0.09	51.5	0.4	11.92	0.10	12.7	1.5	63.41	0.07	58.3	0.6
17	44.54	0.12	51.9	0.2	11.82	0.14	14.2	1.3	63.34	0.10	58.9	0.4
27	44.42	0.13	52.1	0.0	11.68	0.15	15.5	1.2	63.24	0.11	59.3	0.2
Nov. 6	44.29	0.13	52.1	0.3	11.53	0.15	16.7	1.1	63.13	0.13	59,5	0.1
16	44.16	0.13	51.8	0.5	11.38	0.16	17.8	0.9	63.00	0.13	59.4	0.3
26	44.03	0.13	51.3	0.7	11.22	0.15	18.7	0.6	62.87	0.13	59.1	0.5
Dec. 6	43.90	0.12	50.6	0.8	11.07	0.15	19.3	0.3	62.74	0.13	58.6	0.8
16	43.78	0.10	49.8	1.0	10.92	0.14	19.6	0.1	62.61	0.12	57.8	1.0
26	43.68	0.09	48.8	1.1	10.78	0.11	19.7	0.2	62.49	0.10	56.8	1.1
36	43.59		47.7		10.67		19.5		62.39		55.7	

Note.—Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.		ι Piscium.				γ Cephei.			
		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
		23h		4°		23h		76°	
		m s	s	′ ″	″	m s	s	′ ″	″
Jan.	1	32 57.91	0.10	53 29.0	0.8	33 48.03	0.82	52 49.6	1.0
	11	32 57.81	0.09	53 28.2	0.9	33 47.21	0.76	52 48.6	1.5
	21	32 57.72	0.07	53 27.3	0.8	33 46.45	0.66	52 47.1	2.1
	31	32 57.65	0.05	53 26.5	0.8	33 45.79	0.54	52 45.0	2.5
Feb.	10	32 57.60	0.03	53 25.7	0.6	33 45.25	0.39	52 42.5	2.9
	20	32 57.57	0.01	53 25.1	0.5	33 44.86	0.23	52 39.6	3.1
March	1	32 57.58	0.04	53 24.6	0.3	33 44.63	0.06	52 36.5	3.1
	11	32 57.62	0.08	53 24.3	0.0	33 44.57	0.14	52 33.4	3.1
	21	32 57.70	0.10	53 24.3	0.2	33 44.71	0.31	52 30.3	3.0
	31	32 57.80	0.14	53 24.5	0.5	33 45.02	0.48	52 27.3	2.7
April	10	32 57.94	0.18	53 25.0	0.8	33 45.50	0.63	52 24.6	2.3
	20	32 58.12	0.22	53 25.8	1.0	33 46.13	0.76	52 22.3	1.8
	30	32 58.34	0.25	53 26.8	1.3	33 46.89	0.87	52 20.5	1.2
May	10	32 58.59	0.28	53 28.1	1.6	33 47.76	0.96	52 19.3	0.7
	20	32 58.87	0.29	53 29.7	1.7	33 48.72	1.01	52 18.6	0.2
	30	32 59.16	0.31	53 31.4	1.9	33 49.73	1.03	52 18.4	0.4
June	9	32 59.47	0.31	53 33.3	2.0	33 50.76	1.01	52 18.8	1.0
	19	32 59.78	0.31	53 35.3	2.1	33 51.77	1.00	52 19.8	1.5
	29	33 0.09	0.29	53 37.4	2.1	33 52.77	0.93	52 21.3	2.1
July	9	33 0.38	0.27	53 39.5	2.0	33 53.70	0.84	52 23.4	2.5
	19	33 0.65	0.25	53 41.5	1.8	33 54.54	0.75	52 25.9	2.8
	29	33 0.90	0.22	53 43.3	1.7	33 55.29	0.63	52 28.7	3.2
Aug.	8	33 1.12	0.18	53 45.0	1.5	33 55.92	0.49	52 31.9	3.5
	18	33 1.30	0.14	53 46.5	1.3	33 56.41	0.36	52 35.4	3.7
	28	33 1.44	0.10	53 47.8	1.1	33 56.77	0.22	52 39.1	3.7
Sept.	7	33 1.54	0.05	53 48.9	0.9	33 56.99	0.08	52 42.8	3.7
	17	33 1.59	0.02	53 49.8	0.5	33 57.07	0.07	52 46.5	3.7
	27	33 1.61	0.01	53 50.3	0.3	33 57.00	0.21	52 50.2	3.6
Oct.	7	33 1.60	0.04	53 50.6	0.2	33 56.79	0.34	52 53.8	3.4
	17	33 1.56	0.06	53 50.8	0.0	33 56.45	0.46	52 57.2	3.1
	27	33 1.50	0.09	53 50.8	0.2	33 55.99	0.57	53 0.3	2.7
Nov.	6	33 1.41	0.10	53 50.6	0.4	33 55.42	0.67	53 3.0	2.3
	16	33 1.31	0.11	53 50.2	0.5	33 54.75	0.76	53 5.3	1.7
	26	33 1.20	0.12	53 49.7	0.6	33 53.99	0.83	53 7.0	1.1
Dec.	6	33 1.08	0.11	53 49.1	0.7	33 53.16	0.87	53 8.1	0.6
	16	33 0.97	0.11	53 48.4	0.8	33 52.29	0.86	53 8.7	0.0
	26	33 0.86	0.11	53 47.6	0.9	33 51.43	0.86	53 8.7	0.6
	36	33 0.75		53 46.7		33 50.57		53 8.1	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

TABLE GIVING THE CORRECTION OF THREE OF THE POLAR STARS FOR TERMS OF NUTATION INVOLVING 2 ☾.

☽ or ☽—180°.	51 Cephei.		σ Octanis.		λ Urs. Min.		☽ or ☽—180°.	☽ or ☽—180°.	51 Cephei.		σ Octanis.		λ Urs. Min.		☽ or ☽—180°.
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.			R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	
°	s.	″	s.	″	s.	″	°	°	s.	″	s.	″	s.	″	°
0	+.018	+.09	—.025	—.09	—.159	—.08	90	45	—.122	+.01	—.436	+.01	+.224	—.04	135
1	.014	.09	.040	.09	.151	.08	91	46	.123	.00	.435	.01	.229	.04	136
2	.009	.09	.055	.09	.143	.08	92	47	.124	.00	.433	.02	.234	.04	137
3	.005	.09	.070	.09	.135	.08	93	48	.124	+.00	.431	.02	.239	.04	138
4	+.001	.09	.085	.09	.127	.08	94	49	.124	—.01	.428	.02	.244	.04	139
5	—.003	+.09	—.100	—.09	—.118	—.08	95	50	—.124	—.01	—.425	+.02	+.249	—.03	140
6	.008	.09	.115	.08	.109	.08	96	51	.123	.01	.421	.03	.253	.03	141
7	.012	.09	.130	.08	.100	.08	97	52	.123	.02	.417	.03	.256	.03	142
8	.017	.09	.144	.08	.091	.08	98	53	.122	.02	.412	.03	.259	.02	143
9	.021	.09	.158	.08	.082	.08	99	54	.122	.02	.407	.04	.252	.02	144
10	—.025	+.09	—.172	—.08	—.073	—.09	100	55	—.121	—.02	—.401	+.04	+.255	—.02	145
11	.029	.09	.186	.08	.064	.09	101	56	.121	.03	.395	.04	.267	.02	146
12	.033	.09	.200	.08	.055	.09	102	57	.120	.03	.389	.04	.269	.01	147
13	.037	.08	.213	.08	.046	.09	103	58	.119	.03	.382	.05	.271	.01	148
14	.041	.08	.226	.08	.036	.09	104	59	.117	.04	.374	.05	.273	—.01	149
15	—.045	+.08	—.239	—.08	—.026	—.09	105	60	—.115	—.04	—.365	+.05	+.274	+.00	150
16	.049	.08	.251	.07	.017	.09	106	61	.114	.04	.356	.05	.275	.00	151
17	.053	.08	.263	.07	—.008	.09	107	62	.112	.04	.347	.06	.275	.00	152
18	.056	.08	.275	.07	+.002	.09	108	63	.110	.05	.338	.06	.275	.01	153
19	.060	.08	.287	.07	.012	.09	109	64	.108	.05	.328	.06	.275	.01	154
20	—.065	+.08	—.299	—.07	+.022	—.09	110	65	—.106	—.05	—.318	+.06	+.275	+.01	155
21	.069	.07	.310	.07	.032	.09	111	66	.102	.06	.307	.07	.274	.02	156
22	.073	.07	.320	.06	.041	.09	112	67	.100	.06	.296	.07	.272	.02	157
23	.076	.07	.330	.06	.050	.08	113	68	.098	.06	.284	.07	.270	.02	158
24	.079	.07	.340	.06	.060	.08	114	69	.095	.06	.272	.07	.268	.02	159
25	—.082	+.07	—.350	—.06	+.070	—.08	115	70	—.093	—.06	—.261	+.07	+.266	+.03	160
26	.085	.06	.359	.05	.079	.08	116	71	.090	.07	.249	.08	.263	.03	161
27	.088	.06	.368	.05	.088	.08	117	72	.087	.07	.237	.08	.260	.03	162
28	.091	.06	.376	.05	.097	.08	118	73	.084	.07	.224	.08	.257	.04	163
29	.094	.05	.383	.04	.106	.08	119	74	.080	.07	.211	.08	.254	.04	164
30	—.097	+.05	—.390	—.04	+.115	—.08	120	75	—.077	—.07	—.197	+.08	+.250	+.04	165
31	.100	.05	.396	.04	.124	.08	121	76	.074	.08	.183	.09	.246	.04	166
32	.103	.05	.402	.03	.133	.08	122	77	.070	.08	.169	.09	.242	.05	167
33	.105	.04	.408	.03	.142	.07	123	78	.066	.08	.155	.09	.237	.05	168
34	.107	.04	.413	.03	.150	.07	124	79	.062	.08	.141	.09	.232	.05	169
35	—.109	+.04	—.418	—.02	+.158	—.07	125	80	—.059	—.08	—.126	+.09	+.227	+.06	170
36	.111	.04	.423	.02	.165	.07	126	81	.055	.08	.111	.09	.221	.06	171
37	.113	.03	.427	.02	.172	.06	127	82	.050	.08	.096	.09	.215	.06	172
38	.115	.03	.430	—.01	.179	.06	128	83	.047	.09	.081	.09	.209	.06	173
39	.116	.03	.432	+.01	.186	.06	129	84	.043	.09	.066	.09	.203	.06	174
40	—.117	+.03	—.434	+.01	+.193	—.06	130	85	—.039	—.09	—.051	+.09	+.196	+.07	175
41	.118	.02	.435	.00	.199	.05	131	86	.035	.09	.036	.09	.189	.07	176
42	.119	.02	.436	.00	.206	.05	132	87	.030	.09	.021	.09	.182	.07	177
43	.120	.01	.436	.00	.212	.05	133	88	.026	.09	—.006	.09	.175	.07	178
44	.121	.01	.436	.00	.218	.05	134	89	.022	.09	+.009	.09	.167	.07	179
45	.122	.01	.436	+.01	+.224	—.04	135	90	—.018	—.09	+.025	+.09	+.159	+.08	180

NOTE. — When the Argument is on the right-hand side of the Table, the sign of the correction is to be reversed.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap-parent Noon.	Mean Noon.	Ap-parent Noon.	Right Ascen-sion.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Jan. 1	18 46 11.41	12.10	—23 1 49.4	48.6	11.041	12.18	+ 3 43.98	16 18.41	1 11.09	18 42 27.48
2	18 50 36.26	37.04	22 56 43.1	42.2	11.028	13.33	4 12.28	18.40	11.04	18 46 24.05
3	18 55 0.79	1.66	22 51 9.3	8.2	11.014	14.47	4 40.25	18.39	10.99	18 50 20.60
4	18 59 24.95	25.90	22 45 8.2	6.9	10.999	15.61	5 7.86	18.37	10.94	18 54 17.16
5	19 3 48.72	49.75	22 38 40.0	38.5	10.981	16.74	5 35.09	18.35	10.89	18 58 13.72
6	19 8 12.06	13.17	22 31 44.9	43.1	10.963	17.85	6 1.89	18.32	10.82	19 2 10.27
7	19 12 34.95	36.14	22 24 23.1	21.1	10.944	18.96	6 28.23	18.29	10.75	19 6 6.83
8	19 16 57.35	58.62	22 16 34.7	32.4	10.922	20.05	6 54.08	18.26	10.68	19 10 3.39
9	19 21 19.23	20.57	22 8 20.2	17.6	10.900	21.14	7 19.42	18.22	10.61	19 13 59.94
10	19 25 40.57	41.98	21 59 39.7	36.8	10.877	22.22	7 44.20	18.18	10.54	19 17 56.50
11	19 30 1.32	2.80	21 50 33.4	30.2	10.853	23.28	8 6.40	18.14	10.46	19 21 53.06
12	19 34 21.47	23.01	21 40 61.6	58.1	10.827	24.34	8 32.00	18.09	10.38	19 25 49.61
13	19 38 40.99	42.59	21 31 4.8	1.0	10.800	25.37	8 54.97	18.04	10.30	19 29 46.17
14	19 42 59.86	61.52	21 20 43.2	39.1	10.772	26.40	9 17.28	17.98	10.21	19 33 42.74
15	19 47 18.05	19.77	21 9 56.9	52.5	10.743	27.42	9 38.92	17.92	10.12	19 37 39.30
16	19 51 35.55	37.33	20 58 46.2	41.5	10.714	28.43	9 59.86	17.84	10.03	19 41 35.84
17	19 55 52.34	54.17	20 47 11.7	6.7	10.684	29.43	10 20.08	17.77	9.93	19 45 32.40
18	20 0 8.40	10.28	20 35 13.8	8.5	10.653	30.41	10 39.58	17.69	9.83	19 49 28.95
19	20 4 23.71	25.64	20 22 52.5	46.9	10.622	31.37	10 58.33	17.71	9.73	19 53 25.51
20	20 8 38.27	40.25	20 10 8.1	2.1	10.591	32.32	11 16.34	17.52	9.63	19 57 22.07
21	20 12 52.06	54.09	19 56 61.1	54.7	10.559	33.26	11 33.58	17.43	9.53	20 1 18.62
22	20 17 5.08	7.15	19 43 31.8	25.1	10.527	34.17	11 50.05	17.33	9.42	20 5 15.18
23	20 21 17.33	19.44	19 29 40.6	33.6	10.494	35.08	12 5.75	17.22	9.31	20 9 11.73
24	20 25 28.79	30.94	19 15 27.9	20.6	10.461	35.98	12 20.65	17.10	9.20	20 13 8.29
25	20 29 39.45	41.63	19 0 53.8	46.1	10.428	36.86	12 34.74	16.98	9.09	20 17 4.85
26	20 33 49.31	51.53	18 45 58.9	50.8	10.394	37.72	12 48.04	16.86	8.98	20 21 1.40
27	20 37 58.38	60.63	18 30 43.4	35.0	10.361	38.57	13 0.55	16.73	8.87	20 24 57.96
28	20 42 6.66	8.93	18 14 67.8	59.1	10.327	39.40	13 12.27	16.60	8.76	20 28 54.51
29	20 46 14.14	16.43	17 59 12.4	3.4	10.294	40.21	13 23.19	16.46	8.64	20 32 51.07
30	20 50 20.82	23.13	17 42 57.6	48.3	10.261	41.01	13 33.31	16.32	8.52	20 36 47.62
31	20 54 26.69	29.02	17 26 23.9	14.3	10.228	41.79	13 42.62	16.17	8.40	20 40 44.18
Feb. 1	20 58 31.76	34.11	17 9 31.6	21.7	10.194	42.56	13 51.13	16.01	8.29	20 44 40.73
2	21 2 36.02	38.38	16 52 21.1	10.9	10.161	43.31	13 58.83	15.85	8.18	20 48 37.29
3	21 6 39.48	41.85	16 34 52.9	42.5	10.128	44.03	14 5.73	15.69	8.06	20 52 33.84
4	21 10 42.13	44.51	16 16 67.3	56.7	10.095	44.75	14 11.82	15.53	7.94	20 56 30.40
5	21 14 43.98	46.37	15 58 64.7	53.9	10.061	45.45	14 17.10	15.36	7.82	21 0 26.95
6	21 18 45.02	47.41	15 40 45.8	34.8	10.028	46.12	14 21.57	15.19	7.70	21 4 23.51
7	21 22 45.26	47.65	15 21 70.8	59.6	9.994	46.78	14 25.25	15.02	7.59	21 8 20.06
8	21 26 44.69	47.08	15 3 20.2	8.8	9.961	47.42	14 28.12	14.84	7.48	21 12 16.62
9	21 30 43.33	45.72	14 44 14.5	2.9	9.927	48.05	14 30.19	14.66	7.37	21 16 13.17
10	21 34 41.17	43.56	14 24 54.0	42.2	9.894	48.65	14 31.47	14.48	7.26	21 20 9.72
11	21 38 38.22	40.60	14 5 19.1	7.1	9.861	49.24	14 31.96	14.30	7.15	21 24 6.28
12	21 42 34.47	36.84	13 45 30.5	18.4	9.828	49.81	14 31.65	14.11	7.04	21 28 2.83
13	21 46 20.94	32.30	13 25 28.4	16.2	9.796	50.36	14 30.55	13.92	6.93	21 31 59.39
14	21 50 24.65	27.00	13 5 13.3	1.0	9.764	50.89	14 28.70	13.73	6.82	21 35 55.94
15	21 54 18.60	20.94	12 44 45.5	33.1	9.733	51.41	14 26.09	13.54	6.72	21 39 52.49
16	21 58 11.80	14.13	12 23 65.6	53.1	9.702	51.90	14 22.73	13.34	6.62	21 43 49.05
17	22 2 4.26	6.57	12 3 13.9	1.3	9.672	52.39	14 18.64	13.14	6.52	21 47 45.60
18	22 5 56.00	58.29	11 41 70.8	58.2	9.642	52.86	14 13.81	12.94	6.42	21 51 42.16
19	22 9 47.04	49.31	11 20 56.7	44.1	9.612	53.30	14 8.29	12.72	6.32	21 55 38.71
20	22 13 37.39	39.64	10 59 32.0	19.4	9.584	53.74	14 2.08	12.50	6.22	21 59 35.26
21	22 17 27.07	29.30	10 37 57.1	44.8	9.556	54.16	13 55.20	12.28	6.13	22 3 31.82
22	22 21 16.09	18.29	10 15 72.4	59.8	9.529	54.55	13 47.67	12.05	6.04	22 7 28.37
23	22 25 4.48	6.65	9 54 18.2	5.6	9.504	54.94	13 39.50	11.92	5.95	22 11 24.92
24	22 28 52.27	54.41	9 32 14.8	2.3	9.479	55.31	13 30.71	11.69	5.86	22 15 21.48
25	22 32 39.48	41.59	9 9 62.9	50.5	9.455	55.66	13 21.36	11.36	5.77	22 19 18.03
26	22 36 26.10	28.18	8 47 42.9	30.6	9.431	56.00	13 11.44	11.12	5.69	22 23 14.58
27	22 40 12.15	14.20	8 25 14.9	2.7	9.408	56.32	13 0.94	10.88	5.61	22 27 11.14
28	22 43 57.67	59.69	8 2 39.3	27.2	9.386	56.62	12 49.91	10.64	5.53	22 31 7.69
29	22 47 42.69	44.67	7 39 56.7	44.7	9.365	56.91	12 38.37	10.39	5.45	22 35 4.24
30	22 51 27.21	29.15	7 16 67.3	55.4	9.344	57.19	12 26.32	10.14	5.37	22 39 0.79
31	22 55 11.26	13.16	— 6 53 71.7	59.9	9.324	57.44	+12 13.81	16 9.89	1 5.30	22 42 57.35

NOTE.—For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION. Mean Noon.	APPARENT RIGHT ASCENSION. Apparent Noon.	APPARENT DECLINATION. Mean Noon.	APPARENT DECLINATION. Apparent Noon.	HOURLY MOTION. Right Ascension.	HOURLY MOTION. Declination.	Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Mar. 1	22 51 27.21	29.15	− 7 16 67.3	55.4	9.344	57.19	+12 26.32	16 10.14	1 5.37	22 39 0.79
2	22 55 11.26	13.16	6 53 71.7	59.9	9.324	57.44	12 13.81	9.89	5.30	22 42 57.35
3	22 58 54.84	56.70	6 30 70.1	58.4	9.305	57.68	12 0.85	9.63	5.23	22 46 53.90
4	23 2 37.98	39.80	6 7 63.0	51.5	9.287	57.89	11 47.44	9.37	5.16	22 50 50.45
5	23 6 20.69	22.47	5 44 50.9	39.6	9.271	58.10	11 33.59	9.11	5.10	22 54 47.01
6	23 10 3.00	4.74	5 21 34.1	23.0	9.255	58.29	11 19.34	8.85	5.04	22 58 43.56
7	23 13 44.91	46.61	4 58 13.1	2.2	9.239	58.45	11 4.71	8.59	4.98	23 2 40.11
8	23 17 26.44	28.10	4 34 48.1	37.4	9.223	58.61	10 49.69	8.33	4.93	23 6 36.66
9	23 21 7.61	9.23	4 11 19.8	9.3	9.208	58.75	10 34.30	8.07	4.88	23 10 33.22
10	23 24 48.44	50.02	3 47 48.3	38.1	9.194	58.86	10 18.57	7.81	4.83	23 14 29.77
11	23 28 28.94	30.47	3 24 14.2	4.3	9.180	58.97	10 2.52	7.55	4.78	23 18 26.32
12	23 32 9.13	10.62	3 0 37.8	28.2	9.167	59.06	9 46.17	7.29	4.74	23 22 22.87
13	23 35 49.01	50.46	2 36 59.5	50.2	9.155	59.12	9 29.51	7.03	4.70	23 26 19.42
14	23 39 28.62	30.03	2 23 19.7	10.7	9.144	59.18	9 12.55	6.73	4.66	23 30 15.98
15	23 43 7.97	9.33	1 49 38.8	30.1	9.134	59.22	8 55.34	6.50	4.63	23 34 12.53
16	23 46 47.09	48.40	1 25 57.1	48.6	9.124	59.24	8 37.91	6.23	4.60	23 38 9.08
17	23 50 25.99	27.26	1 2 15.0	6.8	9.116	59.25	8 20.26	5.97	4.58	23 42 5.63
18	23 54 4.69	5.92	0 38 32.8	24.9	9.109	59.25	8 2.40	5.70	4.56	23 46 2.19
19	23 57 43.22	44.40	− 0 14 50.9	43.3	9.103	59.23	7 44.38	5.43	4.54	23 49 58.74
20	0 1 21.61	22.74	+ 0 8 50.4	57.7	9.097	59.20	7 26.22	5.16	4.52	23 53 55.29
21	0 4 59.88	60.96	0 32 30.7	37.7	9.092	59.16	7 7.94	4.89	4.50	23 57 51.84
22	0 8 38.04	39.08	0 56 9.7	16.3	9.088	59.09	6 49.55	4.62	4.49	0 1 48.39
23	0 12 16.11	17.11	1 19 47.1	53.4	9.086	59.02	6 31.08	4.34	4.48	0 5 44.95
24	0 15 54.13	55.08	1 43 22.5	28.5	9.084	58.93	6 12.55	4.06	4.47	0 9 41.50
25	0 19 32.13	33.03	2 6 55.6	61.3	9.083	58.82	5 54.00	3.78	4.46	0 13 38.05
26	0 23 10.12	10.97	2 30 26.0	31.4	9.083	58.70	5 35.45	3.50	4.46	0 17 34.60
27	0 26 48.13	48.94	2 53 53.4	58.5	9.084	58.57	5 16.90	3.22	4.46	0 21 31.16
28	0 30 26.18	26.95	3 17 17.5	22.3	9.086	58.43	4 58.40	2.94	4.46	0 25 27.71
29	0 34 4.29	5.01	3 40 37.9	42.4	9.090	58.26	4 39.98	2.66	4.47	0 29 24.26
30	0 37 42.49	43.16	4 3 54.3	58.5	9.094	58.09	4 21.64	2.37	4.48	0 33 20.81
31	0 41 20.78	21.40	4 27 6.2	10.1	9.098	57.90	4 3.37	2.08	4.49	0 37 17.37
Apr. 1	0 44 59.19	59.76	4 50 13.4	17.0	9.103	57.69	3 45.23	1.79	4.51	0 41 13.92
2	0 48 37.74	38.26	5 13 15.3	18.9	9.109	57.47	3 27.23	1.51	4.53	0 45 10.47
3	0 52 16.45	16.92	5 36 12.1	15.3	9.116	57.24	3 9.38	1.23	4.55	0 49 7.02
4	0 55 55.33	55.76	5 59 3.1	5.8	9.123	56.98	2 51.71	0.95	4.58	0 53 3.58
5	0 59 34.40	34.79	6 21 47.8	50.2	9.131	56.72	2 34.24	0.67	4.61	0 57 0.13
6	1 3 13.68	14.02	6 44 25.8	27.9	9.140	56.44	2 16.98	0.39	4.64	1 0 56.68
7	1 6 53.17	53.47	7 6 57.0	58.8	9.149	56.14	1 59.92	16 0.12	4.67	1 4 53.23
8	1 10 32.88	33.14	7 29 20.9	22.4	9.159	55.83	1 43.07	15 59.85	4.71	1 8 49.79
9	1 14 12.84	13.06	7 51 37.2	38.4	9.169	55.51	1 26.48	59.58	4.75	1 12 46.34
10	1 17 53.05	53.23	8 13 45.5	46.5	9.181	55.18	1 10.16	59.31	4.79	1 16 42.89
11	1 21 33.54	33.68	8 35 45.5	46.2	9.193	54.82	0 54.10	59.04	4.83	1 20 39.44
12	1 25 14.31	14.41	8 57 36.8	37.3	9.205	54.45	0 38.31	58.78	4.87	1 24 36.00
13	1 28 55.38	55.44	9 19 19.1	19.4	9.218	54.07	0 22.83	58.52	4.92	1 28 32.55
14	1 32 36.76	36.78	9 40 52.1	52.2	9.231	53.67	+ 0 7.67	58.26	4.97	1 32 29.10
15	1 36 18.47	18.45	10 2 15.4	15.3	9.245	53.26	− 0 7.17	58.00	5.02	1 36 25.66
16	1 40 0.53	0.47	10 23 28.7	28.4	9.260	52.84	0 21.65	57.74	5.07	1 40 22.21
17	1 43 42.96	42.86	10 44 31.7	31.2	9.275	52.40	0 35.78	57.48	5.13	1 44 18.76
18	1 47 25.76	25.62	11 5 24.0	23.3	9.292	51.95	0 49.54	57.22	5.19	1 48 15.32
19	1 51 8.96	8.79	11 26 5.4	4.5	9.309	51.49	1 2.90	56.95	5.25	1 52 11.87
20	1 54 52.57	52.37	11 46 35.6	34.5	9.327	51.02	1 15.84	56.72	5.31	1 56 8.42
21	1 58 36.62	36.38	12 6 54.2	52.9	9.345	50.52	1 28.34	56.46	5.38	2 0 4.98
22	2 2 21.11	20.84	12 26 60.9	59.4	9.364	50.02	1 40.39	56.20	5.45	2 4 1.53
23	2 6 6.07	5.77	12 46 55.3	53.7	9.383	49.51	1 52.00	55.94	5.52	2 7 58.09
24	2 9 51.50	51.17	13 6 37.2	35.5	9.403	48.98	2 3.12	55.69	5.59	2 11 54.64
25	2 13 37.42	37.06	13 26 6.3	4.5	9.424	48.43	2 13.74	55.44	5.66	2 15 51.19
26	2 17 23.84	23.45	13 45 22.3	20.4	9.445	47.88	2 23.87	55.19	5.73	2 19 47.75
27	2 21 10.79	10.38	14 4 24.8	22.8	9.467	47.31	2 33.48	54.94	5.80	2 23 44.30
28	2 24 58.27	57.84	14 23 13.5	11.4	9.489	46.74	2 42.56	54.69	5.88	2 27 40.86
29	2 28 46.29	45.84	14 41 48.0	45.8	9.512	46.13	2 51.10	54.44	5.96	2 31 37.41
30	2 32 34.86	34.39	15 0 8.1	5.9	9.535	45.53	2 59.09	54.20	6.04	2 35 33.96
31	2 36 23.98	23.49	+15 18 13.4	11.1	9.558	44.91	− 3 6.56	15 53.96	1 6.12	2 39 30.52

NOTE.—For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
May 1	2 36 23.98	23.49	+15 18 13.4	11.1	9.558	44.91	— 3 6.56	15 53.96	1 6.12	2 39 30.52
2	2 40 13.66	13.15	15 36 3.6	1.2	9.581	44.27	3 13.41	53.72	6.20	2 43 27.07
3	2 44 3.90	3.37	15 53 38.4	35.9	9.605	43.62	3 19.72	53.49	6.28	2 47 23.63
4	2 47 54.71	54.16	16 10 57.5	55.0	9.628	42.96	3 25.46	53.26	6.36	2 51 20.18
5	2 51 46.09	45.52	16 27 60.5	58.0	9.652	42.28	3 30.64	53.03	6.44	2 55 16.74
6	2 55 38.03	37.45	16 44 47.1	44.6	9.675	41.69	3 35.25	52.81	6.52	2 59 13.29
7	2 59 30.54	29.95	17 1 17.0	14.5	9.699	40.89	3 39.39	52.59	6.60	3 3 9.85
8	3 3 23.61	23.01	17 17 29.9	27.4	9.722	40.17	3 42.78	52.38	6.68	3 7 6.40
9	3 7 17.25	16.64	17 33 25.4	22.9	9.746	39.44	3 45.70	52.17	6.76	3 11 2.96
10	3 11 11.45	10.83	17 49 3.3	0.9	9.769	38.71	3 48.05	51.96	6.85	3 14 59.51
11	3 15 6.21	5.58	18 4 23.4	21.0	9.793	37.96	3 49.84	51.76	6.94	3 18 56.06
12	3 19 1.53	0.89	18 19 25.2	22.8	9.816	37.19	3 51.08	51.56	7.02	3 22 52.62
13	3 22 57.41	56.77	18 34 8.6	6.2	9.840	36.41	3 51.76	51.36	7.10	3 26 49.18
14	3 26 53.84	53.20	18 48 33.1	30.8	9.863	35.63	3 51.88	51.16	7.18	3 30 45.73
15	3 30 50.82	50.18	19 2 38.6	36.4	9.886	34.83	3 51.46	50.97	7.26	3 34 42.29
16	3 34 48.35	47.71	19 16 24.8	22.6	9.909	34.01	3 50.48	50.78	7.34	3 38 38.84
17	3 38 46.42	45.78	19 29 51.5	49.3	9.932	33.19	3 48.96	50.59	7.42	3 42 35.40
18	3 42 45.04	44.40	19 42 58.2	56.1	9.954	32.36	3 46.89	50.41	7.50	3 46 31.95
19	3 46 44.20	43.57	19 55 44.9	42.9	9.977	31.52	3 44.29	50.23	7.58	3 50 28.51
20	3 50 43.90	43.28	20 8 11.3	9.4	9.999	30.67	3 41.15	50.05	7.65	3 54 25.06
21	3 54 44.14	43.53	20 20 17.1	15.2	10.021	29.80	3 37.47	49.88	7.73	3 58 21.62
22	3 58 44.92	44.32	20 32 2.0	0.2	10.043	28.93	3 33.26	49.71	7.81	4 2 18.18
23	4 2 46.23	45.64	20 43 25.9	24.2	10.064	28.05	3 28.52	49.54	7.88	4 6 14.73
24	4 6 48.05	47.48	20 54 28.4	26.8	10.085	27.16	3 23.25	49.37	7.95	4 10 11.29
25	4 10 50.39	49.83	21 5 9.5	8.0	10.107	26.26	3 17.46	49.20	8.02	4 14 7.84
26	4 14 53.24	52.70	21 15 28.8	27.4	10.128	25.35	3 11.16	49.05	8.09	4 18 4.40
27	4 18 56.59	56.07	21 25 26.2	24.9	10.149	24.43	3 4.37	48.89	8.16	4 22 0.96
28	4 22 60.42	59.92	21 35 1.3	0.1	10.169	23.50	2 57.09	48.73	8.22	4 25 57.51
29	4 27 4.73	4.25	21 44 14.1	13.0	10.189	22.57	2 49.34	48.58	8.28	4 29 54.07
30	4 31 9.50	9.05	21 53 4.3	3.3	10.208	21.62	2 41.13	48.43	8.34	4 33 50.63
31	4 35 14.70	14.28	22 1 31.7	30.8	10.226	20.66	2 32.49	48.29	8.40	4 37 47.18
June 1	4 39 20.32	19.93	22 9 36.1	35.3	10.243	19.70	2 23.43	48.15	8.45	4 41 43.74
2	4 43 26.35	25.99	22 17 17.4	16.7	10.259	18.73	2 13.96	48.01	8.50	4 45 40.30
3	4 47 32.76	32.42	22 24 35.4	34.8	10.274	17.76	2 4.09	47.88	8.55	4 49 36.85
4	4 51 39.53	39.21	22 31 29.9	29.4	10.289	16.78	1 53.88	47.76	8.60	4 53 33.41
5	4 55 46.63	46.34	22 38 0.8	0.4	10.303	15.79	1 43.34	47.65	8.64	4 57 29.97
6	4 59 54.05	53.79	22 44 7.9	7.6	10.316	14.80	1 32.48	47.54	8.68	5 1 26.53
7	5 4 1.77	1.54	22 49 51.2	50.9	10.327	13.80	1 21.32	47.43	8.72	5 5 23.08
8	5 8 9.76	9.56	22 55 10.5	10.2	10.338	12.80	1 9.89	47.33	8.76	5 9 19.64
9	5 12 17.98	17.82	23 0 5.6	5.4	10.348	11.79	0 58.22	47.23	8.80	5 13 16.20
10	5 16 26.42	26.29	23 4 36.4	36.3	10.357	10.78	0 46.34	47.14	8.83	5 17 12.75
11	5 20 35.06	34.96	23 8 42.8	42.8	10.364	9.77	0 34.26	47.05	8.86	5 21 9.31
12	5 24 43.88	43.81	23 12 24.8	24.8	10.370	8.75	0 21.99	46.96	8.89	5 25 5.86
13	5 28 52.84	52.81	23 15 42.4	42.4	10.376	7.72	— 0 9.59	46.88	8.91	5 29 2.42
14	5 33 1.93	1.94	23 18 35.4	35.4	10.381	6.69	+ 0 2.95	46.81	8.93	5 32 58.98
15	5 37 11.13	11.18	23 21 3.7	3.7	10.385	5.67	0 15.59	46.74	8.95	5 36 55.54
16	5 41 20.43	20.52	23 23 7.4	7.4	10.389	4.64	0 28.33	46.67	8.96	5 40 52.10
17	5 45 20.79	29.92	23 24 46.3	46.3	10.391	3.61	0 41.13	46.61	8.97	5 44 48.65
18	5 49 39.19	39.36	23 26 0.5	0.5	10.393	2.58	0 53.98	46.55	8.98	5 48 45.21
19	5 53 48.63	48.83	23 26 49.9	49.9	10.393	1.55	1 6.88	46.50	8.98	5 52 41.77
20	5 57 58.09	58.33	23 27 14.5	14.5	10.393	0.51	1 19.78	46.45	8.98	5 56 38.32
21	6 2 7.52	7.80	23 27 14.3	14.3	10.393	0.52	1 32.65	46.40	8.98	6 0 34.88
22	6 6 16.92	17.24	23 26 49.2	49.2	10.391	1.56	1 45.50	46.35	8.97	6 4 31.44
23	6 10 26.28	26.63	23 25 59.4	59.4	10.388	2.59	1 58.30	46.30	8.96	6 8 27.99
24	6 14 35.57	35.95	23 24 44.8	44.8	10.385	3.62	2 11.05	46.26	8.95	6 12 24.55
25	6 18 44.77	45.19	23 23 5.5	5.4	10.381	4.65	2 23.70	46.22	8.93	6 16 21.11
26	6 22 53.86	54.32	23 21 1.4	1.2	10.376	5.68	2 36.23	46.19	8.91	6 20 17.66
27	6 27 2.80	3.30	23 18 32.7	32.4	10.369	6.70	2 48.61	46.16	8.88	6 24 14.22
28	6 31 11.59	12.12	23 15 39.5	39.1	10.362	7.72	3 0.84	46.14	8.85	6 28 10.78
29	6 35 20.20	20.76	23 12 21.8	21.3	10.354	8.74	3 12.90	46.12	8.82	6 32 7.33
30	6 39 28.61	29.21	23 8 39.7	39.1	10.345	9.75	3 24.76	46.11	8.79	6 36 3.89
31	6 43 36.79	37.42	+23 4 33.3	32.6	10.335	10.76	+ 3 36.38	15 46.10	1 8.75	6 40 0.45

NOTE.—For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap-parent Noon.	Mean Noon.	Ap-parent Noon.	Right Ascen-sion.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
July 1	6 43 36.79	37.42	+23 4 33.3	32.6	10.335	10.76	+ 3 36.38	15 46.10	1 8.75	6 40 0.45
2	6 47 44.70	45.36	23 0 2.6	1.8	10.323	11.77	3 47.74	46.09	8.71	6 43 57.01
3	6 51 52.33	53.02	22 55 7.8	6.9	10.311	12.77	3 58.81	46.09	8.67	6 47 53.56
4	6 55 59.66	60.38	22 49 49.1	48.1	10.298	13.77	4 9.57	46.09	8.63	6 51 50.12
5	7 0 6.65	7.40	22 44 6.7	5.6	10.285	14.76	4 20.01	46.10	8.58	6 55 46.68
6	7 4 13.30	14.08	22 37 60.6	59.4	10.270	15.74	4 30.10	46.12	8.53	6 59 43.24
7	7 8 19.57	20.37	22 31 30.9	29.6	10.253	16.72	4 39.82	46.15	8.48	7 3 39.79
8	7 12 25.45	26.27	22 24 37.9	36.5	10.236	17.69	4 49.14	46.19	8.43	7 7 36.35
9	7 16 30.90	31.74	22 17 21.8	20.2	10.219	18.65	4 58.03	46.22	8.37	7 11 32.90
10	7 20 35.92	36.78	22 9 42.6	40.9	10.200	19.60	5 6.49	46.26	8.31	7 15 29.46
11	7 24 40.48	41.36	22 1 40.7	38.9	10.181	20.55	5 14.49	46.31	8.25	7 19 26.02
12	7 28 44.57	45.47	21 53 16.1	14.2	10.161	21.49	5 22.02	46.36	8.18	7 23 22.57
13	7 32 48.17	49.09	21 44 29.0	27.0	10.140	22.42	5 29.06	46.41	8.11	7 27 19.13
14	7 36 51.28	52.22	21 35 19.7	17.5	10.119	23.35	5 35.60	46.47	8.04	7 31 15.69
15	7 40 53.88	54.84	21 25 48.4	46.1	10.097	24.26	5 41.65	46.53	7.97	7 35 12.24
16	7 44 55.96	56.93	21 15 55.3	52.9	10.075	25.17	5 47.18	46.59	7.90	7 39 8.80
17	7 48 57.51	58.49	21 5 40.5	38.0	10.053	26.07	5 52.18	46.66	7.83	7 43 5.35
18	7 52 58.52	59.51	20 55 4.2	1.6	10.031	26.96	5 56.63	46.73	7.76	7 47 1.91
19	7 56 58.99	59.99	20 44 6.8	4.1	10.009	27.84	6 0.53	46.81	7.68	7 50 58.47
20	8 0 58.92	59.93	20 32 48.4	45.5	9.986	28.70	6 3.91	46.89	7.60	7 54 55.02
21	8 4 58.29	59.31	20 21 9.2	6.2	9.963	29.56	6 6.73	46.97	7.52	7 58 51.58
22	8 8 57.10	58.12	20 9 9.4	6.3	9.939	30.41	6 8.98	47.05	7.44	8 2 48.13
23	8 12 55.35	56.37	19 56 49.5	46.3	9.916	31.25	6 10.67	47.14	7.36	8 6 44.69
24	8 16 53.04	54.06	19 44 9.5	6.2	9.892	32.08	6 11.79	47.23	7.27	8 10 41.25
25	8 20 50.15	51.17	19 31 9.7	6.3	9.868	32.89	6 12.35	47.33	7.19	8 14 37.80
26	8 24 46.69	47.71	19 17 50.4	46.9	9.844	33.70	6 12.34	47.43	7.11	8 18 34.36
27	8 28 42.66	43.68	19 4 11.9	8.3	9.820	34.50	6 11.75	47.53	7.03	8 22 30.91
28	8 32 38.05	39.06	18 50 14.5	10.8	9.796	35.29	6 10.58	47.63	6.95	8 26 27.47
29	8 36 32.85	33.85	18 35 58.3	54.6	9.771	36.05	6 8.82	47.74	6.86	8 30 24.02
30	8 40 27.06	28.05	18 21 23.8	20.0	9.747	36.81	6 6.48	47.87	6.77	8 34 20.58
31	8 44 20.68	21.66	18 6 31.1	27.2	9.723	37.56	6 3.55	47.99	6.68	8 38 17.14
Aug. 1	8 48 13.70	14.67	17 51 20.7	16.8	9.698	38.30	6 0.01	48.11	6.59	8 42 13.69
2	8 52 6.13	7.09	17 35 52.7	48.8	9.673	39.02	5 55.88	48.24	6.50	8 46 10.24
3	8 55 57.96	58.90	17 20 7.6	3.7	9.647	39.73	5 51.15	48.38	6.41	8 50 6.80
4	8 59 49.18	50.11	17 4 5.6	1.7	9.622	40.43	5 45.81	48.52	6.32	8 54 3.36
5	9 3 39.80	40.71	16 47 47.1	43.2	9.597	41.11	5 39.87	48.66	6.23	8 57 59.91
6	9 7 29.81	30.70	16 31 12.3	8.4	9.572	41.78	5 33.33	48.81	6.14	9 1 56.46
7	9 11 19.22	20.09	16 14 21.6	17.7	9.547	42.44	5 26.18	48.96	6.06	9 5 53.02
8	9 15 8.03	8.85	15 57 15.3	11.5	9.522	43.08	5 18.44	49.12	5.98	9 9 49.57
9	9 18 56.25	57.07	15 39 53.7	49.9	9.497	43.71	5 10.10	49.28	5.89	9 13 46.13
10	9 22 43.88	44.67	15 22 17.1	13.4	9.472	44.33	5 1.18	49.45	5.81	9 17 42.68
11	9 26 30.92	31.68	15 4 25.9	22.2	9.448	44.94	4 51.67	49.62	5.73	9 21 39.24
12	9 30 17.38	18.11	14 46 20.1	16.5	9.424	45.53	4 41.58	49.79	5.65	9 25 35.79
13	9 34 3.27	3.97	14 27 60.1	56.6	9.401	46.11	4 30.91	49.97	5.57	9 29 32.35
14	9 37 48.61	49.28	14 9 26.6	23.2	9.378	46.68	4 19.69	50.15	5.49	9 33 28.90
15	9 41 33.41	34.05	13 50 39.6	36.3	9.355	47.24	4 7.93	50.34	5.41	9 37 25.45
16	9 45 17.68	18.29	13 31 39.3	36.1	9.334	47.78	3 55.65	50.53	5.33	9 41 22.01
17	9 49 1.43	2.01	13 12 26.0	22.9	9.313	48.31	3 42.85	50.72	5.26	9 45 18.56
18	9 52 44.68	45.22	12 52 60.1	57.2	9.292	48.83	3 39.55	50.91	5.19	9 49 15.12
19	9 56 27.45	27.95	12 33 22.0	19.3	9.272	49.34	3 15.76	51.11	5.12	9 53 11.67
20	10 0 9.74	10.21	12 13 31.7	29.2	9.253	49.83	3 1.50	51.31	5.05	9 57 8.22
21	10 3 51.58	52.01	11 53 29.8	27.5	9.234	50.31	2 46.78	51.51	4.98	10 1 4.78
22	10 7 32.98	33.37	11 33 16.5	14.4	9.216	50.78	2 31.62	51.71	4.92	10 5 1.33
23	10 11 13.96	14.31	11 12 52.1	50.1	9.198	51.24	2 16.05	51.92	4.86	10 8 57.88
24	10 14 54.54	54.85	10 52 17.0	15.2	9.182	51.68	2 0.07	52.13	4.80	10 12 54.44
25	10 18 34.72	34.99	10 31 31.4	29.8	9.166	52.11	1 43.70	52.34	4.74	10 16 50.99
26	10 22 14.52	14.75	10 10 35.7	34.3	9.151	52.53	1 26.96	52.55	4.68	10 20 47.55
27	10 25 53.96	54.14	9 49 30.1	29.0	9.136	52.93	1 9.85	52.76	4.62	10 24 44.10
28	10 29 33.04	33.17	9 28 15.0	14.2	9.121	53.32	0 52.38	52.98	4.57	10 28 40.65
29	10 33 11.78	11.87	9 6 50.8	50.2	9.107	53.69	0 34.57	53.20	4.52	10 32 37.20
30	10 36 50.21	50.26	8 45 17.9	17.6	9.094	54.04	+ 0 16.44	53.42	4.47	10 36 33.76
31	10 40 28.33	28.33	+8 23 36.5	36.6	9.081	54.39	— 0 1.99	15 53.66	1 4.42	10 40 30.31

NOTE. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Sept. 1	10 44 6.14	6.09	+ 8 1 47.0	47.4	9.069	54.72	— 0 20.72	15 53.88	1 4.38	10 44 26.86
2	10 47 43.67	43.57	7 39 49.8	50.5	9.058	55.04	0 39.73	54.11	4.34	10 48 23.41
3	10 51 20.93	20.78	7 17 45.1	46.1	9.047	55.34	0 59.01	54.35	4.30	10 52 19.97
4	10 54 57.94	57.74	6 55 33.3	34.6	9.037	55.63	1 18.55	54.60	4.26	10 52 16.52
5	10 58 34.70	34.45	6 33 14.8	16.4	9.027	55.91	1 38.33	54.85	4.23	11 0 13.07
6	11 2 11.24	10.94	6 10 49.9	51.8	9.018	56.16	1 58.35	55.10	4.20	11 4 9.63
7	11 5 47.56	47.21	5 48 18.9	21.1	9.009	56.41	2 18.58	55.35	4.18	11 8 6.18
8	11 9 23.69	23.29	5 25 42.2	44.7	9.001	56.64	2 39.00	55.61	4.16	11 12 2.73
9	11 12 59.64	59.19	5 3 0.2	3.0	8.994	56.86	2 59.60	55.87	4.14	11 15 59.28
10	11 16 35.44	34.94	4 40 13.0	16.1	8.988	57.06	3 20.36	56.13	4.12	11 19 55.84
11	11 20 11.09	10.54	4 17 21.0	24.5	8.982	57.26	3 41.25	56.39	4.10	11 23 52.39
12	11 23 46.63	46.02	3 54 24.6	28.5	8.978	57.44	4 2.25	56.65	4.09	11 27 48.94
13	11 27 22.08	21.42	3 31 24.1	28.3	8.975	57.60	4 23.34	56.91	4.08	11 31 45.47
14	11 30 57.46	56.75	3 8 19.7	24.2	8.973	57.75	4 44.50	57.17	4.07	11 35 42.04
15	11 34 32.80	32.04	2 45 11.7	16.5	8.971	57.89	5 5.72	57.43	4.06	11 39 38.60
16	11 38 8.11	7.30	2 22 0.6	5.8	8.971	58.01	5 26.96	57.69	4.06	11 43 35.15
17	11 41 43.42	42.55	1 58 46.6	52.2	8.972	58.12	5 48.20	57.96	4.06	11 47 31.70
18	11 45 18.75	17.83	1 35 30.1	36.0	8.973	58.23	6 9.41	58.22	4.07	11 51 28.25
19	11 48 54.13	53.16	1 12 11.2	17.4	8.976	58 32	6 30.57	58.48	4.08	11 55 24.80
20	11 52 29.58	28.56	0 48 50.4	57.0	8.979	58.39	6 51.67	58.74	4.09	11 59 21.36
21	11 56 5.13	4.06	0 25 28.1	35.1	8.984	58.45	7 12.66	59.01	4.10	12 3 17.91
22	11 39 40.79	39.66	+ 0 2 4.5	11.9	8.989	58.50	7 33.54	59.28	4.11	12 7 14.46
23	12 3 16.59	15.40	— 0 21 20.0	12.3	8.996	58.53	7 54.28	59.54	4.13	12 11 11.01
24	12 6 52.56	51.31	0 44 45.1	37.1	9.003	58.55	8 14.87	15 59.81	4.15	12 15 7.57
25	12 10 28.70	27.41	1 8 10.4	2.1	9.011	58.55	8 35.27	16 0.08	4.17	12 19 4.12
26	12 14 5.04	3.70	1 31 35.6	26.9	9.019	58.53	8 55.48	0.35	4.21	12 23 0.67
27	12 17 41.60	40.21	1 54 60.3	51.2	9.028	58.50	9 15.48	0.62	4.24	12 26 57.22
28	12 21 18.39	16.95	2 18 24.1	14.7	9.038	58.46	9 35.24	0.89	4.28	12 30 53.77
29	12 24 55.43	53.94	2 41 46.6	36.9	9.049	58.40	9 54.75	1.16	4.32	12 34 50.32
30	12 28 32.75	31.21	3 4 67.6	57.6	9.061	58.33	10 13.99	1.44	4.36	12 38 46.88
Oct. 1	12 32 10.35	8.76	3 28 26.6	16.3	9.073	58.24	10 32.94	1.72	4.40	12 42 43.43
2	12 35 48.26	46.62	3 51 43.3	32.7	9.086	58.13	10 51.59	2.00	4.44	12 46 39.99
3	12 39 26.48	24.79	4 14 57.2	46.3	9.099	58.01	11 9.91	2.28	4.49	12 50 36.54
4	12 43 5.01	3.30	4 37 68.1	57.0	9.113	57.88	11 27.89	2.56	4.54	12 54 33.09
5	12 46 43.95	42.16	5 1 15.5	4.2	9.128	57.73	11 45.54	2.84	4.60	12 58 29.64
6	12 50 23.23	21.39	5 24 19.0	7.5	9.145	57.56	12 2.82	3.13	4.66	13 2 26.19
7	12 54 2.89	1.01	5 47 18.3	6.6	9.162	57.38	12 19.72	3.42	4.73	13 6 22.75
8	12 57 42.97	41.04	6 10 13.1	1.2	9.179	57.18	12 36.19	3.70	4.80	13 10 19.30
9	13 1 23.47	21.49	6 32 62.9	50.8	9.197	56.96	12 52.22	3.98	4.87	13 14 15.85
10	13 5 4.42	2.39	6 55 47.3	35.0	9.215	56.73	13 7.82	4.26	4.94	13 18 12.40
11	13 8 45.82	43.76	7 18 26.1	13.6	9.235	56.49	13 22.97	4.55	5.01	13 22 8.96
12	13 12 27.71	25.61	7 40 58.8	46.1	9.256	56.23	13 37.64	4.84	5.08	13 26 5.51
13	13 16 10.12	7.98	8 3 25.1	12.2	9.278	55.96	13 51.80	5.12	5.16	13 30 2.06
14	13 19 53.05	50.87	8 25 44.8	31.7	9.300	55.67	14 5.41	5.40	5.24	13 33 58.61
15	13 23 36.54	34.32	8 47 57.2	44.0	9.323	55.36	14 18.48	5.67	5.32	13 37 55.17
16	13 27 20.60	18.34	9 10 2.2	48.9	9.347	55.04	14 30.99	5.94	5.40	13 41 51.72
17	13 31 5.25	2.96	9 31 59.3	45.9	9.373	54.71	14 42.89	6.21	5.49	13 45 48.27
18	13 34 50.52	48.18	9 53 48.2	34.7	9.399	54.33	14 54.17	6.48	5.58	13 49 44.82
19	13 38 36.43	34.05	10 15 28.4	14.8	9.426	53.99	15 4.82	6.75	5.67	13 53 41.38
20	13 42 22.99	20.58	10 36 59.7	46.1	9.453	53.60	15 14.82	7.01	5.76	13 57 37.93
21	13 46 10.22	7.78	10 58 21.6	8.0	9.482	53.20	15 24.16	7.27	5.86	14 1 34.48
22	13 49 58.14	55.67	11 19 33.7	20.1	9.511	52.79	15 32.79	7.53	5.96	14 5 31.03
23	13 53 46.77	44.27	11 40 35.5	22.0	9.541	52.36	15 40.72	7.79	6.06	14 9 27.59
24	13 57 36.12	33.59	12 1 26.9	13.4	9.571	51.91	15 47.93	8.05	6.16	14 13 24 14
25	14 1 26.21	23.66	12 21 67.3	53.8	9.602	51.45	15 54.40	8.31	6.26	14 17 20.70
26	14 5 17.05	14.48	12 42 36.2	22.7	9.634	50.96	16 0.12	8.56	6.36	14 21 17.25
27	14 9 8.64	6.05	13 2 53.3	39.8	9.666	50.46	16 5.10	8.81	6.47	14 25 13.80
28	14 12 60.99	58.38	13 22 58.2	44.8	9.698	49.93	16 9.33	9.07	6.58	14 29 10.36
29	14 16 54.12	51.49	13 42 50.4	37.1	9.730	49.39	16 12.77	9.32	6.69	14 33 6.91
30	14 20 48.03	45.38	14 2 29.6	16.4	9.763	48.83	16 15.42	9.57	6.80	14 37 3.47
31	14 24 42.73	40.07	14 21 55.3	42.2	9.796	48.27	16 17.28	9.82	6.91	14 41 0.02
32	14 28 38.22	35.55	—14 40 67.2	54.2	9.829	47.68	—16 18.34	16 10.07	1 7.03	14 44 56.57

NOTE.—For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Nov. 1	14 28 38.22	35.55	−14 40 67.2	54.2	9.829	47.68	−16 18.34	16 10.07	1 7.03	14 44 56.57
2	14 32 34.51	31.83	14 59 64.6	51.7	9.862	47.08	16 18.63	10.32	7.15	14 48 53.13
3	14 36 31.60	28.91	15 18 47.4	34.7	9.896	46.46	16 18.10	10.57	7.27	14 52 49.68
4	14 40 29.50	26.80	15 37 14.9	2.4	9.929	45.83	16 16.77	10.82	7.39	14 56 46.24
5	14 44 28.20	25.50	15 55 26.9	14.6	9.963	45.17	16 14.63	11.07	7.51	15 0 42.79
6	14 48 27.71	25.01	16 13 22.8	10.7	9.997	44.49	16 11.67	11.31	7.63	15 4 39.35
7	14 52 28.05	25.35	16 30 62.5	50.6	10.031	43.80	16 7.89	11.55	7.75	15 8 35.90
8	14 56 29.21	26.51	16 48 25.3	13.7	10.065	43.10	16 3.29	11.79	7.87	15 12 32.45
9	15 0 31.20	28.51	17 5 31.0	19.7	10.100	42.37	15 57.86	12.03	7.99	15 16 29.01
10	15 4 34.02	31.34	17 22 19.1	8.1	10.134	41.63	15 51.60	12.26	8.11	15 20 25.56
11	15 8 37.68	35.01	17 38 49.2	38.5	10.169	40.88	15 44.50	12.48	8.23	15 24 22.12
12	15 12 42.18	39.52	17 54 60.9	50.5	10.204	40.10	15 36.56	12.70	8.35	15 28 18.67
13	15 16 47.52	44.88	18 10 54.0	43.9	10.239	39.31	15 27.79	12.92	8.47	15 32 15.23
14	15 20 53.70	51.08	18 26 27.8	18.0	10.274	38.50	15 18.17	13.13	8.59	15 36 11.78
15	15 24 60.73	58.13	18 41 42.1	32.6	10.309	37.68	15 7.71	13.34	8.71	15 40 8.34
16	15 29 8.61	6.04	18 56 36.6	27.5	10.344	36.85	14 56.40	13.54	8.82	15 44 4.89
17	15 33 17.33	14.79	19 11 10.8	2.0	10.379	35.99	14 44.24	13.73	8.94	15 48 1.45
18	15 37 26.89	24.38	19 25 24.4	15.9	10.414	35.12	14 31.24	13.92	9.05	15 51 58.01
19	15 41 37.29	34.81	19 39 17.0	8.8	10.449	34.23	14 17.39	14.11	9.16	15 55 54.56
20	15 45 48.53	46.08	19 52 48.1	40.3	10.484	33.33	14 2.72	14.30	9.27	15 59 51.12
21	15 49 60.59	58.18	20 5 57.5	50.1	10.518	32.42	13 47.23	14.49	9.38	16 3 47.67
22	15 54 13.47	11.10	20 18 44.9	37.8	10.552	31.50	13 30.92	14.67	9.49	16 7 44.23
23	15 58 27.15	24.82	20 31 9.8	3.0	10.586	30.56	13 13.79	14.85	9.60	16 11 40.78
24	16 2 41.62	39.33	20 43 11.8	5.3	10.619	29.60	12 55.88	15.02	9.70	16 15 37.34
25	16 6 56.86	54.62	20 54 50.7	44.6	10.651	28.63	12 37.19	15.19	9.80	16 19 33.90
26	16 11 12.86	10.67	21 6 6.1	0.4	10.681	27.65	12 17.75	15.35	9.90	16 23 30.45
27	16 15 29.59	27.45	21 16 57.6	52.3	10.711	26.65	11 57.59	15.51	10.00	16 27 27.01
28	16 19 47.03	44.95	21 27 25.1	20.2	10.740	25,64	11 36.71	15.67	10.10	16 31 23.57
29	16 24 5.17	3.15	21 37 28.1	23.5	10.769	24.61	11 15.13	15.83	10.19	16 35 20.12
30	16 28 23.97	22.01	21 47 6.3	2.0	10.796	23.58	10 52.89	15.99	10.28	16 39 16.68
Dec. 1	16 32 43.41	41.52	21 56 19.5	15.5	10.822	22.53	10 30.01	16.14	10.37	16 43 13.23
2	16 37 3.45	1.63	22 5 7.3	3.7	10.847	21.46	10 6.51	16.29	10.45	16 47 9.79
3	16 41 24.09	22.34	22 13 29.5	26.2	10.871	20.39	9 42.43	16.43	10.53	16 51 6.35
4	16 45 45.29	43.61	22 21 25.8	22.8	10.894	19.31	9 17.79	16.57	10.61	16 55 2.90
5	16 50 7.02	5.41	22 28 56.0	53.3	10.915	18.22	8 52.61	16.71	10.69	16 58 59.46
6	16 54 29.26	27.72	22 35 59.9	57.5	10.936	17.12	8 26.92	16.84	10.75	17 2 56.02
7	16 58 51.99	50.53	22 42 37.3	35.2	10.956	16.01	8 0.75	16.96	10.81	17 6 52.58
8	17 3 15.17	13.79	22 48 47.8	46.0	10.974	14.89	7 34.11	17.08	10.87	17 10 49.13
9	17 7 38.77	37.47	22 54 31.4	29.8	10.992	13.76	7 7.06	17.19	10.93	17 14 45.69
10	17 12 2.77	1.55	22 59 47.7	46.3	11.008	12.62	6 39.62	17.31	10.99	17 18 42.25
11	17 16 27.15	26.01	23 4 36.7	35.5	11.023	11.48	6 11.79	17.42	11.04	17 22 38.80
12	17 20 51.87	50.81	23 8 58.2	57.2	11.037	10.33	5 43.63	17.52	11.08	17 26 35.36
13	17 25 16.92	15.95	23 12 52.2	51.4	11.050	9.18	5 15.14	17.61	11.12	17 30 31.92
14	17 29 42.25	41.37	23 16 18.4	17.8	11.061	8.02	4 46.33	17.70	11.16	17 34 28.47
15	17 34 7.85	7.06	23 19 16.7	16.3	11.072	6.86	4 17.28	17.79	11.20	17 38 25.03
16	17 38 33.68	32.98	23 21 47.0	46.7	11.081	5.69	3 48.00	17.87	11.22	17 42 21.59
17	17 42 59.72	59.11	23 23 49.2	49.0	11.089	4.52	3 18.52	17.93	11.24	17 46 18.15
18	17 47 25.93	25.41	23 25 23.2	23.1	11.096	3.35	2 48.85	17.99	11.26	17 50 14.70
19	17 51 52.29	51.86	23 26 29.0	29.0	11.100	2.17	2 19.04	18.05	11.28	17 54 11.26
20	17 56 18.76	18.42	23 27 6.5	6.5	11.104	0.99	1 49.12	18.11	11.29	17 58 7.82
21	18 0 45.32	45.08	23 27 15.8	15.8	11.106	0.19	1 19.11	18.16	11.30	18 2 4.38
22	18 5 11.91	11.77	23 26 56.8	56.8	11.108	1.37	0 49.05	18.20	11.30	18 6 0.93
23	18 9 38.51	38.46	23 26 9.5	9.5	11.108	2.55	— 0 18.99	18.24	11.29	18 9 57.49
24	18 14 5.09	5.13	23 24 53.8	53.8	11.105	3.73	+ 0 11.04	18.28	11.28	18 13 54.05
25	18 18 31.60	31.73	23 23 9.7	9.7	11.102	4.91	0 41.00	18.31	11.27	18 17 50.60
26	18 22 58.01	58.23	23 20 57.4	57.3	11.097	6.09	1 10.87	18.33	11.26	18 21 47.16
27	18 27 24.28	24.59	23 18 17.0	16.8	11.090	7.26	1 40.60	18.35	11.24	18 25 43.71
28	18 31 50.36	50.76	23 15 8.6	8.3	11.082	8.42	2 10.13	18.37	11.20	18 29 40.27
29	18 36 16.23	16.72	23 11 32.2	31.8	11.073	9.58	2 39.45	18.39	11.17	18 33 36.83
30	18 40 41.85	42.43	23 7 28.0	27.4	11.062	10.74	3 8.53	18.40	11.14	18 37 33.38
31	18 45 7.18	7.85	23 2 56.0	55.3	11.049	11.89	3 37.31	18.41	11.10	18 41 29.94
32	18 49 32.19	32.94	—22 57 56.4	55.6	11.035	13.04	+ 4 5.76	16 18.41	1 11.06	18 45 26.50

Note.—For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Jan. 1	1	II. L.	12 19 2.57	2.07943	62.86	— 6 16 11.8	—2.81671
1	1	II. U.	12 43 19.16	2.08962	63.62	— 8 25 52.8	—2.80611
2	2	II. L.	13 8 13.40	2.10165	64.52	—10 31 40.6	—2.79007
2	2	II. U.	13 33 52.22	2.11518	65.55	—12 31 57.1	—2.76678
3	3	II. L.	14 0 21.97	2.12959	66.68	—14 24 51.9	—2.73480
3	3	II. U.	14 27 47.98	2.14520	67.90	—16 8 21.4	—2.69037
4	4	II. L.	14 56 13.91	2.16086	69.14	—17 40 8.8	—2.62910
4	4	II. U.	15 25 41.25	2.17583	70.36	—18 57 48.4	—2.54258
5	5	II. L.	15 56 8.55	2.18963	71.50	—19 58 51.3	—2.41447
5	5	II. U.	16 27 31.06	2.20145	72.50	—20 40 52.4	—2.20030
6	6	II. L.	16 59 40.13	2.21072	73.28	—21 1 42.6	—1.68215
6	6	II. U.	17 32 24.06	2.21685	73.80	—20 59 41.9	+1.84011
7	7	II. L.	18 5 28.42	2.21953	74.03	—20 33 52.3	+2.27715
7	7	II. U.	18 38 37.68	2.21890	73.96	—19 44 6.6	+2.48869
8	8	II. L.	19 11 36.60	2.21495	73.62	—18 31 11.7	+2.62366
9	8	I. U.	19 41 45.99	2.20847	73.06	—16 56 47.3	+2.71759
9	9	I. L.	20 13 49.21	2.19992	72.33	—15 3 17.0	+2.78569
10	9	I. U.	20 45 12.22	2.19005	71.50	—12 53 37.2	+2.83461
10	10	I. L.	21 15 51.74	2.17967	70.64	—10 31 3.7	+2.86882
11	10	I. U.	21 45 47.61	2.16932	69.80	— 7 58 59.7	+2.89126
11	11	I. L.	22 15 2.15	2.15966	69.02	— 5 20 44.7	+2.90380
12	11	I. U.	22 43 39.92	2.15100	68.34	— 2 39 28.2	+2.90795
12	12	I. L.	23 11 46.05	2.14373	67.78	+ 0 1 55.8	+2.90461
13	12	I. U.	23 39 26.52	2.13799	67.34	+ 2 40 50.1	+2.89448
13	13	I. L.	0 6 47.71	2.13376	67.02	+ 5 14 55.6	+2.87789
14	14	I. U.	0 33 55.55	2.13101	66.82	+ 7 42 9.4	+2.85485
14	14	I. L.	1 0 55.52	2.12969	66.72	+10 0 43.9	+2.82510
15	15	I. U.	1 27 52.30	2.12943	66.70	+12 9 5.1	+2.78803
15	15	I. L.	1 54 49.65	2.13001	66.74	+14 5 50.4	+2.74257
16	16	I. U.	2 21 50.25	2.13114	66.82	+15 49 48.5	+2.68673
16	16	I. L.	2 48 55.48	2.13245	66.91	+17 19 58.0	+2.61784
17	17	I. U.	3 16 5.51	2.13364	66.98	+18 35 27.8	+2.53084
17	17	I. L.	3 43 19.26	2.13431	67.02	+19 35 37.2	+2.41747
18	18	I. U.	4 10 34.46	2.13428	66.98	+20 19 57.6	+2.25912
18	18	I. L.	4 37 47.92	2.13322	66.87	+20 48 12.2	+2.00303
19	19	I. U.	5 4 55.75	2.13111	66.67	+21 0 17.4	+1.30320
19	19	I. L.	5 31 53.69	2.12778	66.37	+20 56 23.4	—1.77012
20	20	I. U.	5 58 37.50	2.12336	65.99	+20 36 52.6	—2.13194
20	20	I. L.	6 25 3.20	2.11783	65.53	+20 2 20.7	—2.31994
21	21	I. U.	6 51 7.52	2.11140	65.01	+19 13 34.4	—2.44404
21	21	I. L.	7 16 48.04	2.10442	64.45	+18 11 29.3	—2.53403
22	22	I. U.	7 42 3.20	2.09712	63.87	+16 57 8.4	—2.60271
22	22	I. L.	8 6 52.83	2.08969	63.31	+15 31 39.6	—2.65648
23	23	II. U.	8 33 22.90	2.08250	62.77	+13 56 14.3	—2.69888
24	23	II. L.	8 57 23.14	2.07584	62.30	+12 12 5.9	—2.73280
24	24	II. U.	9 21 2.61	2.06997	61.88	+10 20 27.3	—2.75959
25	24	II. L.	9 44 24.65	2.06517	61.52	+ 8 22 30.9	—2.78061
25	25	II. U.	10 7 33.26	2.06164	61.28	+ 6 19 28.4	—2.79657
26	25	II. L.	10 30 32.91	2.05967	61.16	+ 4 12 30.1	—2.80808
26	26	II. U.	10 53 28.61	2.05929	61.16	+ 2 2 44.6	—2.81544

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Jan. 27	26	II. L.	11 16 25.70	2.06066	61.28	— 0 8 39.3	—2.81902
27	27	II. U.	11 39 29.93	2.06386	61.54	— 2 20 33.0	—2.81875
28	28	II. L.	12 2 47.25	2.06893	61.94	— 4 31 46.5	—2.81451
28	28	II. U.	12 26 23.85	2.07580	62.47	— 6 41 6.6	—2.80604
29	29	II. L.	12 50 26.07	2.08451	63.14	— 8 47 16.3	—2.79281
29	29	II. U.	13 14 59.99	2.09489	63.93	—10 48 53.5	—2.77393
30	30	II. L.	13 40 11.86	2.10660	64.84	—12 44 27.9	—2.74819
30	30	II. U.	14 6 7.29	2.11946	65.86	—14 32 21.9	—2.71374
31	31	II. L.	14 32 51.17	2.13312	66.94	—16 10 48.3	—2.66773
31	31	II. U.	15 0 27.20	2.14722	68.07	—17 37 51.4	—2.60574
Feb. 1	32	II. L.	15 28 57.55	2.16107	69.20	—18 51 28.8	—2.51983
1	32	II. U.	15 58 22.23	2.17421	70.28	—19 49 33.1	—2.39463
2	33	II. L.	16 28 38.74	2.18605	71.26	—20 30 0.3	—2.19061
2	33	II. U.	16 59 41.78	2.19610	72.10	—20 50 54.6	—1.72263
3	34	II. L.	17 31 23.29	2.20366	72.74	—20 50 38.7	+1.75205
3	34	II. U.	18 3 32.83	2.20860	73.14	—20 28 4.3	+2.22968
4	35	II. L.	18 35 58.43	2.21077	73.30	—19 42 40.7	+2.45271
4	35	II. U.	19 8 27.60	2.21013	73.22	—18 34 41.6	+2.59660
5	36	II. L.	19 40 48.65	2.20705	72.93	—17 5 7.9	+2.69627
5	36	II. U.	20 12 51.51	2.20194	72.47	—15 15 45.4	+2.77276
6	37	II. L.	20 44 28.68	2.19543	71.89	—13 8 59.9	+2.82769
7	37	II. U.	21 15 35.34	2.18794	71.24	—10 47 47.4	+2.86729
7	38	I. L.	21 43 48.34	2.18021	70.58	— 8 15 24.0	+2.89443
8	38	I. U.	22 13 51.56	2.17260	69.96	— 5 35 15.5	+2.91084
8	39	I. L.	22 43 24.61	2.16569	69.40	— 2 50 47.9	+2.91777
9	39	I. U.	23 12 30.90	2.15960	68.91	— 0 5 19.6	+2.91624
9	40	I. L.	23 41 14.58	2.15454	68.51	+ 2 38 3.7	+2.90682
10	41	I. U.	0 9 40.13	2.15057	68.22	+ 5 16 34.1	+2.88986
10	41	I. L.	0 37 51.90	2.14762	68.02	+ 7 47 42.0	+2.86540
11	42	I. U.	1 5 53.88	2.14560	67.88	+10 9 18.5	+2.83315
11	42	I. L.	1 33 49.35	2.14429	67.78	+12 19 33.4	+2.79253
12	43	I. U.	2 1 40.66	2.14342	67.76	+14 16 55.6	+2.74225
12	43	I. L.	2 29 29.29	2.14279	67.74	+16 0 11.6	+2.68034
13	44	I. U.	2 57 15.64	2.14220	67.69	+17 28 24.3	+2.60423
13	44	I. L.	3 24 59.05	2.14126	67.62	+18 40 52.1	+2.50799
14	45	I. U.	3 52 37.94	2.13978	67.51	+19 37 8.0	+2.38093
14	45	I. L.	4 20 9.99	2.13751	67.33	+20 16 58.7	+2.19921
15	46	I. U.	4 47 32.25	2.13444	67.07	+20 40 24.5	+1.88309
15	46	I. L.	5 14 41.55	2.13050	66.74	+20 47 37.9	—0.57978
16	47	I. U.	5 41 34.72	2.12568	66.33	+20 39 2.5	—1.91169
16	47	I. L.	6 8 8.80	2.12008	65.85	+20 15 12.6	—2.19340
17	48	I. U.	6 34 21.36	2.11384	65.33	+19 36 50.8	—2.35545
17	48	I. L.	7 0 10.63	2.10711	64.77	+18 44 47.9	—2.46672
18	49	I. U.	7 25 35.59	2.10010	64.20	+17 39 59.5	—2.54913
18	49	I. L.	7 50 36.11	2.09307	63.64	+16 23 26.8	—2.61300
19	50	I. U.	8 15 12.86	2.08628	63.09	+14 56 13.9	—2.66361
19	50	I. L.	8 39 27.26	2.07994	62.59	+13 19 27.5	—2.70406
20	51	I. U.	9 3 21.47	2.07427	62.14	+11 34 15.7	—2.73648
20	51	I. L.	9 26 58.32	2.06952	61.77	+ 9 41 47.8	—2.76230
21	52	I. U.	9 50 21.19	2.06580	61.48	+ 7 43 13.6	—2.78254

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Feb. 22	52	II. L.	10 15 36.46	2.06341	61.29	+ 5 39 43.6	—2.79789
22	53	II. U.	10 38 43.00	2.06236	61.21	+ 3 32 29.6	—2.80862
23	53	II. L.	11 1 48.33	2.06273	61.24	+ 1 22 41.6	—2.81518
23	54	II. U.	11 24 57.25	2.06465	61.39	— 0 48 25.6	—2.81750
24	54	II. L.	11 48 14.75	2.06811	61.66	— 2 59 38.1	—2.81564
24	55	II. U.	12 11 45.93	2.07313	62.05	— 5 9 38.8	—2.80949
25	56	II. L.	12 35 36.00	2.07961	62.55	— 7 17 8.3	—2.79858
25	56	II. U.	12 59 50.14	2.08771	63.17	— 9 20 43.9	—2.78240
26	57	II. L.	13 24 33.29	2.09695	63.90	—11 18 58.4	—2.75989
26	57	II. U.	13 49 50.06	2.10714	64.72	—13 10 20.4	—2.72997
27	58	II. L.	14 15 44.65	2.11826	65.61	—14 53 13.9	—2.69055
27	58	II. U.	14 42 20.30	2.12982	66.55	—16 25 58.6	—2.63899
28	59	II. L.	15 9 39.32	2.14148	67.50	—17 46 50.3	—2.57019
28	59	II. U.	15 37 42.58	2.15284	68.44	—18 54 3.9	—2.47596
29	60	II. L.	16 6 29.29	2.16352	69.33	—19 45 54.8	—2.33866
29	60	II. U.	16 35 56.90	2.17304	70.14	—20 20 44.4	—2.11059
Mar. 1	61	II. L.	17 6 0.82	2.18107	70.82	—20 37 4.4	—1.52114
1	61	II. U.	17 36 34.96	2.18730	71.35	—20 33 42.3	+1.82995
2	62	II. L.	18 7 31.54	2.19153	71.70	—20 9 48.4	+2.23477
2	62	II. U.	18 38 42.11	2.19376	71.87	—19 25 0.6	+2.44138
3	63	II. L.	19 9 58.01	2.19402	71.86	—18 19 28.6	+2.57807
3	63	II. U.	19 41 11.20	2.19249	71.70	—16 53 56.2	+2.67733
4	64	II. L.	20 12 14.83	2.18955	71.42	—15 9 42.1	+2.75205
4	64	II. U.	20 43 3.68	2.18557	71.05	—13 8 37.1	+2.80882
5	65	II. L.	21 13 34.44	2.18105	70.63	—10 53 0.0	+2.85126
5	65	II. U.	21 43 45.71	2.17629	70.21	— 8 25 33.5	+2.88178
6	66	II. L.	22 13 37.77	2.17185	69.81	— 5 49 16.2	+2.90217
6	66	II. U.	22 43 12.15	2.16782	69.46	— 3 7 18.2	+2.91312
7	67	I. L.	23 10 13.12	2.16444	69.18	— 0 22 52.3	+2.91535
8	67	I. U.	23 39 20.85	2.16194	68.97	+ 2 20 50.9	+2.90934
8	68	I. L.	0 8 19.56	2.16011	68.83	+ 5 0 48.0	+2.89515
9	69	I. U.	0 37 12.40	2.15894	68.75	+ 7 34 9.5	+2.87268
9	69	I. L.	1 6 1.58	2.15836	68.72	+ 9 58 20.5	+2.84142
10	70	I. U.	1 34 48.72	2.15794	68.72	+12 11 7.1	+2.80058
10	70	I. L.	2 3 34.45	2.15761	68.72	+14 10 34.4	+2.74920
11	71	I. U.	2 32 18.30	2.15697	68.70	+15 55 11.8	+2.68476
11	71	I. L.	3 0 58.73	2.15576	68.64	+17 23 50.3	+2.60401
12	72	I. U.	3 29 33.22	2.15381	68.53	+18 35 42.3	+2.50051
12	72	I. L.	3 57 58.58	2.15097	68.32	+19 30 22.2	+2.36173
13	73	I. U.	4 26 11.05	2.14712	68.03	+20 7 43.5	+2.15806
13	73	I. L.	4 54 6.81	2.14220	67.66	+20 27 57.4	+1.77085
14	74	I. U.	5 21 42.18	2.13637	67.20	+20 31 29.6	—1.36361
14	74	I. L.	5 48 53.94	2.12966	66.68	+20 18 58.7	—2.00604
15	75	I. U.	6 15 39.53	2.12225	66.08	+19 51 12.8	—2.24428
15	75	I. L.	6 41 57.39	2.11445	65.46	+19 9 6.8	—2.38863
16	76	I. U.	7 7 46.81	2.10643	64.82	+18 13 40.8	—2.48968
16	76	I. L.	7 33 8.04	2.09854	64.18	+17 5 57.1	—2.56538
17	77	I. U.	7 58 2.26	2.09092	63.58	+15 47 0.4	—2.62428
17	77	I. L.	8 22 31.41	2.08393	63.01	+14 17 55.1	—2.67117
18	78	I. U.	8 46 38.14	2.07773	62.51	+12 39 46.1	—2.70893

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Mar. 18	78	I. L.	9 10 25.72	2.07251	62.08	+10 53 38.1	—2.73941
19	79	I. U.	9 33 57.84	2.06849	61.75	+ 9 0 35.5	—2.76395
19	79	I. L.	9 57 18.64	2.06573	61.51	+ 7 1 43.8	—2.78326
20	80	I. U.	10 20 32.54	2.06435	61.38	+ 4 58 8.8	—2.79782
20	80	I. L.	10 43 44.18	2.06453	61.36	+ 2 50 58.7	—2.80808
21	81	I. U.	11 6 58.36	2.06621	61.46	+ 0 41 23.4	—2.81418
21	81	I. L.	11 30 20.05	2.06937	61.67	— 1 29 23.6	—2.81611
22	82	I. U.	11 53 54.15	2.07405	62.00	— 3 40 5.2	—2.81358
23	83	II. L.	12 19 50.44	2.08012	62.44	— 5 49 20.3	—2.80638
23	83	II. U.	12 44 4.99	2.08750	62.98	— 7 55 42.5	—2.79393
24	84	II. L.	13 8 46.37	2.09601	63.64	— 9 57 41.1	—2.77546
24	84	II. U.	13 33 58.53	2.10537	64.37	—11 53 40.9	—2.74989
25	85	II. L.	13 59 44.95	2.11538	65.17	—13 42 1.9	—2.71584
25	85	II. U.	14 26 8.21	2.12581	66.00	—15 21 1.5	—2.67080
26	86	II. L.	14 53 9.96	2.13618	66.86	—16 48 55.4	—2.61151
26	86	II. U.	15 20 50.36	2.14622	67.70	—18 3 59.9	—2.53212
27	87	II. L.	15 49 8.28	2.15549	68.48	—19 4 35.5	—2.42177
27	87	II. U.	16 18 0.79	2.16367	69.20	—19 49 9.5	—2.25624
28	88	II. L.	16 47 23.63	2.17044	69.79	—20 16 21.7	—1.95809
28	88	II. U.	17 17 11.03	2.17557	70.25	—20 25 7.4	+0.56820
29	89	II. L.	17 47 16.16	2.17892	70.55	—20 14 41.8	+2.00475
29	89	II. U.	18 17 31.76	2.18053	70.70	—19 44 43.7	+2.29842
30	90	II. L.	18 47 50.60	2.18044	70.70	—18 55 16.3	+2.47012
30	90	II. U.	19 18 6.12	2.17889	70.58	—17 46 49.8	+2.58928
31	91	II. L.	19 48 12.84	2.17624	70.34	—16 20 19.5	+2.67733
31	91	II. U.	20 18 6.90	2.17284	70.04	—14 37 3.9	+2.74476
Apr. 1	92	II. L.	20 47 46.03	2.16900	69.70	—12 38 44.2	+2.79671
1	92	II. U.	21 17 9.52	2.16521	69.35	—10 27 19.5	+2.83632
2	93	II. L.	21 46 18.31	2.16182	69.03	— 8 5 5.6	+2.86581
2	93	II. U.	22 15 14.46	2.15899	68.76	— 5 34 30.2	+2.88638
3	94	II. L.	22 44 0.97	2.15703	68.56	— 2 58 13.1	+2.89818
3	94	II. U.	23 12 41.40	2.15597	68.45	— 0 18 59.7	+2.90244
4	95	II. L.	23 41 19.42	2.15585	68.42	+ 2 20 20.5	+2.89889
4	96	II. U.	0 9 58.56	2.15655	68.46	+ 4 56 57.8	+2.88745
5	96	II. L.	0 38 41.94	2.15794	68.56	+ 7 28 6.5	+2.86782
6	97	I. U.	1 5 14.29	2.15975	68.69	+ 9 51 8.7	+2.83929
6	97	I. L.	1 34 11.11	2.16167	68.85	+12 3 37.3	+2.80085
7	98	I. U.	2 3 15.11	2.16328	69.01	+14 3 21.8	+2.75105
7	98	I. L.	2 32 24.75	2.16432	69.12	+15 48 32.5	+2.68735
8	99	I. U.	3 1 37.00	2.16442	69.16	+17 17 41.2	+2.60606
8	99	I. L.	3 30 47.63	2.16334	69.11	+18 29 43.7	+2.49969
9	100	I. U.	3 59 51.59	2.16089	68.94	+19 24 1.6	+2.35411
9	100	I. L.	4 28 43.11	2.15694	68.66	+20 0 22.2	+2.13386
10	101	I. U.	4 57 16.55	2.15158	68.26	+20 18 55.0	+1.69020
10	101	I. L.	5 25 26.56	2.14491	67.75	+20 20 9.4	—1.55509
11	102	I. U.	5 53 8.78	2.13707	67.16	+20 4 52.2	—2.06558
11	102	I. L.	6 20 19.87	2.12830	66.50	+19 34 0.5	—2.28194
12	103	I. U.	6 46 57.75	2.11912	65.79	+18 48 41.6	—2.41647
12	103	I. L.	7 13 1.80	2.10975	65.07	+17 50 5.2	—2.51095
13	104	I. U.	7 38 32.70	2.10058	64.37	+16 39 24.8	—2.58161

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Apr. 13	104	I. L.	8 3 32.17	2.09188	63.70	+15 17 51.8	−2.63739
14	105	I. U.	8 28 2.92	2.08390	63.08	+13 46 36.4	−2.68006
14	105	I. L.	8 52 8.44	2.07708	62.54	+12 6 46.9	−2.71500
15	106	I. U.	9 15 53.02	2.07144	62.10	+10 19 27.6	−2.74335
15	106	I. L.	9 39 21.36	2.06726	61.77	+ 8 25 41 6	−2.76597
16	107	I. U.	10 2 38.47	2.06472	61.55	+ 6 26 31.1	−2.78369
16	107	I. L.	10 25 49.59	2.06371	61.44	+ 4 22 58.2	−2.79720
17	108	I. U.	10 49 0.20	2.06461	61.47	+ 2 16 6.1	−2.80679
17	108	I. L.	11 12 15.95	2.06722	61.61	+ 0 6 59.8	−2.81231
18	109	I. U.	11 35 42.38	2.07151	61.89	− 2 3 10.9	−2.81391
18	109	I. L.	11 59 25.12	2.07733	62.30	− 4 13 10.9	−2.81117
19	110	I. U.	12 23 29.62	2.08483	62.82	− 6 21 40.7	−2.80366
19	111	I. L.	12 48 1.09	2.09356	63.45	− 8 27 11.7	−2.79071
20	111	I. U.	13 13 4.21	2.10339	64.17	−10 28 9.8	−2.77137
20	112	I. L.	13 38 43.04	2.11404	64.97	−12 22 52.0	−2.74414
21	112	II. U.	14 7 12.45	2.12512	65.84	−14 9 30.0	−2.70740
22	113	II. L.	14 34 12.95	2.13621	66.72	−15 46 10.5	−2.65820
22	113	II. U.	15 1 54.77	2.14690	67.59	−17 11 0.1	−2.59251
23	114	II. L.	15 30 16.69	2.15682	68.42	−18 22 5.7	−2.50256
23	114	II. U.	15 59 15.67	2.16551	69.16	−19 17 41.0	−2.37365
24	115	II. L.	16 28 46.69	2.17254	69.78	−19 56 12.8	−2.16997
24	115	II. U.	16 58 42.86	2.17768	70 25	−20 16 25.3	−1.73078
25	116	II. L.	17 28 56.23	2.18073	70.54	−20 17 28.7	+1.63949
25	116	II. U.	17 59 18.24	2.18170	70.66	−19 58 56.3	+2.15168
26	117	II. L.	18 29 40.13	2.18064	70.61	−19 20 51.2	+2.37785
26	117	II. U.	18 59 54.20	2.17791	70.42	−18 23 43.6	+2.52101
27	118	II. L.	19 29 53.88	2.17380	70.09	−17 8 30.0	+2.62252
27	118	II. U.	19 59 34.58	2.16873	69.68	−15 36 30.1	+2.69845
28	119	II. L.	20 28 53.61	2.16316	69.22	−13 49 21.5	+2.75626
28	119	II. U.	20 57 50.36	2.15773	68.78	−11 48 56.4	+2.80072
29	120	II. L.	21 26 26.01	2.15265	68.36	− 9 37 17.2	+2.83423
29	120	II. U.	21 54 43.26	2.14845	67.99	− 7 16 34.3	+2.85878
30	121	II. L.	22 22 45.93	2.14526	67.71	− 4 49 3.8	+2.87547
30	121	II. U.	22 50 38.51	2.14333	67.52	− 2 17 5.3	+2.88485
May 1	122	II. L.	23 18 26.08	2.14270	67.44	+ 0 16 58.2	+2.88734
1	122	II. U.	23 46 13.64	2.14336	67.46	+ 2 50 42.4	+2.88298
2	123	II. L.	0 14 5.99	2.14516	67.58	+ 5 21 41.3	+2.87151
2	124	II. U.	0 42 7.26	2.14795	67.77	+ 7 47 29.7	+2.85254
3	124	II. L.	1 10 20.63	2.15143	68.02	+10 5 46.1	+2.82530
3	125	II. U.	1 38 47.93	2.15509	68.29	+12 14 14.5	+2.78831
4	125	II. L.	2 7 29.71	2.15857	68.57	+14 10 48.4	+2.74020
4	126	II. U.	2 36 24.61	2.16161	68.81	+15 53 33.2	+2.67815
5	126	I. L.	3 3 11.65	2.16361	68.99	+17 20 53.6	+2.59770
6	127	I. U.	3 32 22.19	2.16426	69.05	+18 31 34.2	+2.49150
6	127	I. L.	4 1 32.81	2.16337	68.90	+19 24 43.0	+2.34439
7	128	I. U.	4 30 36.70	2.16071	68.80	+19 59 53.8	+2.11628
7	128	I. L.	4 59 26.72	2.15625	68.47	+20 17 6.4	+1.61909
8	129	I. U.	5 27 56.06	2.15008	68.01	+20 16 43.8	−1.64738
8	129	I. L.	5 55 58.82	2.14248	67.44	+19 59 29.6	−2.10312
9	130	I. U.	6 23 30.26	2.13370	66.77	+19 26 23.0	−2.30835

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
May 9	130	I. L.	6 50 27.15	2.12405	66.04	+18 38 34.4	−2.43743
10	131	I. U.	7 16 47.89	2.11384	65.29	+17 37 21.1	−2.52840
10	131	I. L.	7 42 32.52	2.10387	64.54	+16 24 4.2	−2.59594
11	132	I. U.	8 7 42.35	2.09433	63.84	+15 0 2.8	−2.64816
11	132	I. L.	8 32 20.17	2.08547	63.18	+13 26 34.3	−2.68931
12	133	I. U.	8 56 29.57	2.07766	62.60	+11 44 51.6	−2.72181
12	133	I. L.	9 20 14.93	2.07118	62.13	+ 9 56 5.0	−2.74796
13	134	I. U.	9 43 41.39	2.06632	61.76	+ 8 1 22.0	−2.76864
13	134	I. L.	10 6 54.50	2.06318	61.52	+ 6 1 42.5	−2.78469
14	135	I. U.	10 30 0.13	2.06187	61.40	+ 3 58 7.0	−2.79664
14	135	I. L.	10 53 4.34	2.06254	61.43	+ 1 51 36.4	−2.80496
15	136	I. U.	11 16 13.41	2.06517	61.59	− 0 16 48.3	−2.80956
15	136	I. L.	11 39 33.68	2.06978	61.90	− 2 26 2.5	−2.81050
16	137	I. U.	12 3 11.60	2.07628	62.34	− 4 34 57.7	−2.80733
16	138	I. L.	12 27 13.39	2.08450	62.91	− 6 42 18.4	−2.79969
17	138	I. U.	12 51 45.04	2.09423	63.61	− 8 46 41.2	−2.78675
17	139	I. L.	13 16 52.14	2.10527	64.42	−10 46 34.0	−2.76745
18	139	I. U.	13 42 39.64	2.11724	65.32	−12 40 14.9	−2.74028
18	140	I. L.	14 9 11.60	2.12982	66.27	−14 25 52.5	−2.70312
19	140	I. U.	14 36 30.52	2.14245	67.25	−16 1 28.2	−2.65273
19	141	I. L.	15 4 37.24	2.15464	68.21	−17 24 58.5	−2.58410
20	141	I. U.	15 33 30.51	2.16587	69.14	−18 34 18.9	−2.48855
21	142	II. L.	16 5 26.61	2.17557	69.96	−19 27 30.9	−2.34772
21	142	II. U.	16 35 40.79	2.18330	70.62	−20 2 50.5	−2.11193
22	143	II. L.	17 6 22.92	2.18873	71.10	−20 18 52.8	−1.48001
22	143	II. U.	17 37 22.95	2.19165	71.37	−20 14 43.7	+1.85854
23	144	II. L.	18 8 29.86	2.19193	71.43	−19 50 0.4	+2.24304
23	144	II. U.	18 39 32.78	2.18971	71.27	−19 4 56.6	+2.43965
24	145	II. L.	19 10 22.08	2.18546	70.95	−18 0 20.0	+2.56808
24	145	II. U.	19 40 49.87	2.17958	70.49	−16 37 31.2	+2.65963
25	146	II. L.	20 10 50.76	2.17260	69.94	−14 58 13.4	+2.72795
25	146	II. U.	20 40 21.71	2.16510	69.34	−13 4 29.4	+2.77902
26	147	II. L.	21 9 22.18	2.15764	68.74	−10 58 33.0	+2.81717
26	147	II. U.	21 37 53.97	2.15076	68.20	− 8 42 45.7	+2.84485
27	148	II. L.	22 6 0.45	2.14476	67.72	− 6 19 29.3	+2.86404
27	148	II. U.	22 33 46.01	2.14007	67.34	− 3 51 4.1	+2.87576
28	149	II. L.	23 1 16.15	2.13675	67.07	− 1 19 49.4	+2.88053
28	149	II. U.	23 28 36.73	2.13504	66.91	+ 1 11 58.4	+2.87898
29	150	II. L.	23 55 53.65	2.13485	66.88	+ 3 42 8.0	+2.87105
29	151	II. U.	0 23 12.40	2.13609	66.95	+ 6 8 30.7	+2.85661
30	151	II. L.	0 50 38.04	2.13849	67.11	+ 8 28 59.8	+2.83525
30	152	II. U.	1 18 14.57	2.14179	67.34	+10 41 33.6	+2.80598
31	152	II. L.	1 46 4.95	2.14566	67.63	+12 44 15.7	+2.76768
31	153	II. U.	2 14 10.60	2.14965	67.92	+14 35 16.1	+2.71834
June 1	153	II. L.	2 42 31.34	2.15330	68.19	+16 12 53.9	+2.65523
1	154	II. U.	3 11 5.26	2.15625	68.41	+17 35 41.6	+2.57357
2	154	II. L.	3 39 48.69	2.15803	68.54	+18 42 26.9	+2.46553
2	155	II. U.	4 8 36.44	2.15836	68.56	+19 32 16.6	+2.31323
3	155	II. L.	4 37 22.24	2.15694	68.44	+20 4 40.2	+2.07078
4	156	I. U.	5 3 42.75	2.15375	68.19	+20 19 29.7	+1.48287

WASHINGTON MERIDIAN.

Mean Solar Date.		Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
		d		h m s		s	° ′ ″	
June	4	156	I. L.	5 32 4.47	2.14876	67.77	+20 16 58.8	—1.74036
	5	157	I. U.	6 0 3.95	2.14217	67.28	+19 57 44.7	—2.13577
	5	157	I. L.	6 27 35.70	2.13418	66.67	+19 22 40.5	—2.32899
	6	158	I. U.	6 54 35.51	2.12516	65.99	+18 32 51.6	—2.45271
	6	158	I. L.	7 21 0.86	2.11548	65.26	+17 29 37.0	—2.54095
	7	159	I. U.	7 46 50.79	2.10554	64.53	+16 14 18.4	—2.60681
	7	159	I. L.	8 12 5.87	2.09583	63.82	+14 48 18.2	—2.65744
	8	160	I. U.	8 36 48.07	2.08657	63.15	+13 12 58.5	— 2.69705
	8	160	I. L.	9 1 0.45	2.07824	62.56	+11 29 38.7	—2.72803
	9	161	I. U.	9 24 47.07	2.07118	62.06	+ 9 39 33.0	—2.75236
	9	161	I. L.	9 48 12.65	2.06562	61.67	+ 7 43 50.8	—2.77122
	10	162	I. U.	10 11 22.50	2.06179	61.40	+ 5 43 38.9	—2.78561
	10	162	I. L.	10 34 22.48	2.05975	61.26	+ 3 40 0.1	—2.79595
	11	163	I. U.	10 57 18.76	2.05964	61.25	+ 1 33 54.8	—2.80257
	11	163	I. L.	11 20 17.69	2.06153	61.38	— 0 33 37.7	—2.80584
	12	164	I. U.	11 43 25.80	2.06565	61.68	— 2 41 35.3	—2.80564
	12	165	I. L.	12 6 49.79	2.07181	62.12	— 4 48 54.4	—2.80154
	13	165	I. U.	12 30 36.46	2.07983	62.60	— 6 54 25.9	—2.79323
	13	166	I. L.	12 54 52.46	2.08962	63.39	— 8 56 54.0	—2.77995
	14	166	I. U.	13 19 43.76	2.10089	64.22	—10 54 53.1	—2.76057
	14	167	I. L.	13 45 16.45	2.11341	65.16	—12 46 50.7	—2.73376
	15	167	I. U.	14 11 35.64	2.12678	66 17	—14 31 0.3	—2.69732
	15	168	I. L.	14 38 45.16	2.14057	67.23	—16 5 27.0	—2.64797
	16	168	I. U.	15 6 47.04	2.15424	68.30	—17 28 8.0	—2.58070
	16	169	I. L.	15 35 41.41	2.16705	69.34	—18 36 55.8	—2.48615
	17	169	I. U.	16 5 25.82	2.17866	70.28	—19 29 44.4	—2.34459
	17	170	I. L.	16 35 54.94	2.18828	71.09	—20 4 36.5	—2.10243
	18	170	I. U.	17 7 0.73	2.19548	71.69	—20 19 50.8	—1.39794
	18	171	I. L.	17 38 32.69	2.20006	72.08	—20 14 17.0	+1.90849
	19	171	I. U.	18 10 18.93	2.20170	72.23	—19 47 19.2	+2.27508
	20	172	II. L.	18 44 31.24	2.20058	72.13	—18 59 0.8	+2.46820
	20	172	II. U.	19 16 8.71	2.19692	71.85	—17 50 9.5	+2.59494
	21	173	II. L.	19 47 25.90	2.19120	71.40	—16 22 9.0	+2.68556
	21	173	II. U.	20 18 15.25	2.18410	70.83	—14 36 58.0	+2.75205
	22	174	II. L.	20 48 32.21	2.17595	70.16	—12 36 50.0	+2.80127
	22	174	II. U.	21 18 15.00	2.16755	69.50	—10 24 48.6	+2.83689
	23	175	II. L.	21 47 24.30	2.15951	68.87	— 8 3 10.6	+2.86130
	23	175	II. U.	22 16 2.87	2.15223	68.29	— 5 34 50.5	+2.87691
	24	176	II. L.	22 44 14.85	2.14613	67.80	— 3 2 20.4	+2.88497
	24	176	II. U.	23 12 5.64	2.14139	67.43	— 0 28 39.4	+2.88593
	25	177	II. L.	23 39 40.96	2.13814	67.18	+ 2 4 16.5	+2.88001
	25	178	II. U.	0 7 6.62	2.13637	67.04	+ 4 34 2.3	+2.86770
	26	178	II. L.	0 34 28.27	2.13605	67.01	+ 6 58 32.6	+2.84887
	26	179	II. U.	1 1 51.09	2.13701	67.08	+ 9 15 49.6	+2.82302
	27	179	II. L.	1 29 19.25	2.13887	67.21	+11 24 4.6	+2.78951
	27	180	II. U.	1 56 55.92	2.14142	67.40	+13 21 36.4	+2.74695
	28	180	II. L.	2 24 43.01	2.14426	67.60	+15 6 52.6	+2.69320
	28	181	II. U.	2 52 41.04	2.14700	67.80	+16 38 30.6	+2.62542
	29	181	II. L.	3 20 48.88	2.14925	67.95	+17 55 19.4	+2.53845
	29	182	II. U.	3 49 3.89	2.15060	68.04	+18 56 22.3	+2.42243

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
June 30	182	II. L.	4 17 22.00	2.15073	68.02	+19 40 57.5	+2.25720
30	183	II. U.	4 45 38.42	2.14956	67.90	+20 8 40.8	+1.98227
July 1	183	II. L.	5 13 47.06	2.14678	67.66	+20 19 26.7	+1.06446
1	184	II. U.	5 41 42.03	2.14242	67.29	+20 13 30.1	−1.84942
2	184	II. L.	6 9 17.65	2.13662	66.82	+19 51 22.2	−2.17493
2	185	II. U.	6 36 28.89	2.12953	66.25	+19 13 51.3	−2.35064
3	185	I. L.	7 1 0.60	2.12143	65.62	+18 21 58.8	−2.46731
4	186	I. U.	7 27 13.96	2.11264	64.94	+17 16 55.9	−2.55145
4	186	I. L.	7 52 55.14	2.10353	64.25	+16 0 0.4	−2.61479
5	187	I. U.	8 18 4.17	2.09444	63.58	+14 32 33.1	−2.66398
5	187	I. L.	8 42 42.40	2.08572	62.94	+12 55 55.8	−2.70226
6	188	I. U.	9 6 52.22	2.07769	62.37	+11 11 28.0	−2.73215
6	188	I. L.	9 30 36.95	2.07074	61.88	+ 9 20 27.8	−2.75542
7	189	I. U.	9 54 0.70	2.06502	61.49	+ 7 24 7.7	−2.77305
7	189	I. L.	10 17 8.20	2.06085	61.21	+ 5 23 38.1	−2.78597
8	190	I. U.	10 40 4.65	2.05835	61.06	+ 3 20 5.1	−2.79498
8	190	I. L.	11 2 55.64	2.05767	61.03	+ 1 14 32.0	−2.80003
9	191	I. U.	11 25 47.12	2.05892	61.14	− 0 51 58.5	−2.80161
9	191	I. L.	11 48 45.23	2.06209	61.38	− 2 58 25.1	−2.79955
10	192	I. U.	12 11 56.29	2.06729	61.79	− 5 3 44.5	−2.79379
10	193	I. L.	12 35 26.79	2.07438	62.30	− 7 6 50.8	−2.78398
11	193	I. U.	12 59 23.12	2.08325	62.96	− 9 6 33.5	−2.76938
11	194	I. L.	13 23 51.64	2.09367	63.75	−11 1 35.4	−2.74912
12	194	I. U.	13 48 58.36	2.10568	64.64	−12 50 31.5	−2.72165
12	195	I. L.	14 14 48.73	2.11863	65.63	−14 31 47.9	−2.68520
13	195	I. U.	14 41 27.29	2.13223	66.69	−16 3 41.1	−2.63639
13	196	I. L.	15 8 57.31	2.14607	67.77	−17 24 19.3	−2.57019
14	196	I. U.	15 37 20.37	2.15954	68.84	−18 31 43.8	−2.47799
14	197	I. L.	16 6 35.75	2.17214	69.86	−19 23 53.7	−2.34064
15	197	I. U.	16 36 40.34	2.18327	70.77	−19 58 51.4	−2.10857
15	198	I. L.	17 7 28.21	2.19240	71.51	−20 14 51.1	−1.47422
16	198	I. U.	17 38 50.91	2.19915	72.08	−20 10 27.7	+1.87274
16	199	I. L.	18 10 37.93	2.20322	72.41	−19 44 45.3	+2.26150
17	199	I. U.	18 42 37.55	2.20455	72.51	−18 57 26.5	+2.46270
17	200	I. L.	19 14 37.92	2.20330	72.39	−17 48 56.1	+2.59539
18	200	I. U.	19 46 28.12	2.19976	72.09	−16 20 21.6	+2.69046
19	201	II. L.	20 20 22.41	2.19440	71.63	−14 33 31.1	+2.76042
19	201	II. U.	20 51 26.60	2.18780	71.08	−12 30 45.5	+2.81258
20	202	II. L.	21 22 1.08	2.18053	70.48	−10 14 49.9	+2.84979
20	202	II. U.	21 52 4.70	2.17313	69.88	− 7 48 45.0	+2.87541
21	203	II. L.	22 21 38.46	2.16613	69.32	− 5 15 36.6	+2.89104
21	203	II. U.	22 50 45.11	2.15990	68.83	− 2 38 29.3	+2.89796
22	204	II. L.	23 19 28.59	2.15461	68.43	− 0 0 20.1	+2.89686
22	204	II. U.	23 47 53.53	2.15051	68.12	+ 2 36 4.8	+2.88840
23	205	II. L.	0 16 4.87	2.14768	67.91	+ 5 8 13.1	+2.87274
23	206	II. U.	0 44 7.38	2.14600	67.80	+ 7 33 47.3	+2.84991
24	206	II. L.	1 12 5.41	2.14538	67.77	+ 9 50 43.9	+2.81974
24	207	II. U.	1 40 2.51	2.14554	67.78	+11 57 13.9	+2.78075
25	207	II. L.	2 8 1.32	2.14622	67.83	+13 51 42.7	+2.73231
25	208	II. U.	2 36 3.34	2.14712	67.91	+15 32 48.4	+2.67219

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
July 26	208	II. L.	3 4 8.77	2.14792	67.96	+16 59 23.4	+2.59649
26	209	II. U.	3 32 16.57	2.14829	67.98	+18 10 33.8	+2.49996
27	209	II. L.	4 0 24.48	2.14789	67.93	+19 5 40.2	+2.37014
27	210	II. U.	4 28 29.26	2.14662	67.79	+19 44 18.6	+2.17984
28	210	II. L.	4 56 26.87	2.14411	67.57	+20 6 20.4	+1.83632
28	211	II. U.	5 24 12.83	2.14051	67.25	+20 11 52.6	—1.11394
29	211	II. L.	5 51 42.66	2.13574	66.83	+20 1 17.5	—1.96473
29	212	II. U.	6 18 52.09	2.12960	66.33	+19 35 11.4	—2.22531
30	212	II. L.	6 45 37.56	2.12271	65.76	+18 54 22.9	—2.37894
30	213	II. U.	7 11 56.31	2.11508	65.14	+17 59 50.8	—2.48444
31	213	II. L.	7 37 46.65	2.10694	64.49	+16 52 42.0	—2.56265
31	214	II. U.	8 3 7.89	2.09868	63.84	+15 34 8.5	—2.62242
Aug. 1	214	II. L.	8 28 0.40	2.09047	63.21	+14 5 26.2	—2.66913
2	215	I. U.	8 50 20.30	2.08268	62.62	+12 27 52.2	—2.70569
2	215	I. L.	9 14 21.41	2.07558	62.10	+10 42 42.9	—2.73448
3	216	I. U.	9 38 0.34	2.06933	61.66	+ 8 51 13.8	—2.75671
3	216	I. L.	10 1 20.66	2.06431	61.29	+ 6 54 39.5	—2.77349
4	217	I. U.	10 24 26.50	2.06055	61.04	+ 4 54 10.2	—2 78554
4	217	I. L.	10 47 22.42	2.05824	60.89	+ 2 50 55.5	—2.79323
5	218	I. U.	11 10 13.30	2.05763	60.86	+ 0 46 2.4	—2.79706
5	218	I. L.	11 33 4.33	2.05862	60.96	— 1 19 23.1	—2.79699
6	219	I. U.	11 56 0.88	2.06134	61.19	— 3 24 16.5	—2.79323
6	220	I. L.	12 19 8.49	2.06580	61.54	— 5 27 31.2	—2.78554
7	220	I. U.	12 42 32.82	2.07192	62.01	— 7 28 0.7	—2.77349
7	221	I. L.	13 6 19.50	2.07969	62.60	— 9 24 34.3	—2.75664
8	221	I. U.	13 30 34.08	2.08895	63.31	—11 15 58.4	—2.73392
8	222	I. L.	13 55 21.87	2.09940	64.13	—13 0 53.9	—2.70424
9	222	I. U.	14 20 47.80	2.11089	65.02	—14 37 55.6	—2.66539
9	223	I. L.	14 46 56.01	2.12313	65.98	—16 5 31.9	—2.61469
10	223	I. U.	15 13 49.78	2.13574	66.97	—17 22 5.0	2.54691
10	224	I. L.	15 41 30.94	2.14826	67.97	—18 25 52.5	—2.45347
11	224	I. U.	16 9 59.86	2.16017	68.93	—19 15 9.9	—2.31660
11	225	I. L.	16 39 14.80	2.17111	69.83	—19 48 14.3	—2.08636
12	225	I. U.	17 9 12.05	2.18058	70.61	—20 3 29.4	—1.46538
12	226	I. L.	17 39 45.77	2.18828	71.23	—19 59 34.7	+1.84136
13	226	I. U.	18 10 48.36	2.19382	71.68	—19 35 29.8	+2.23528
13	227	I. L.	18 42 10.85	2.19717	71.94	—18 50 43.4	+2.44044
14	227	I. U.	19 13 43.78	2.19844	72.02	—17 45 18.6	+2.57715
14	228	I. L.	19 45 17.94	2.19761	71.92	—16 19 56.9	+2.67614
15	228	I. U.	20 16 45.17	2.19510	71.69	—14 35 57.6	+2.75051
15	229	I. L.	20 47 58.98	2.19134	71.34	—12 35 17.4	+2.80693
16	229	I. U.	21 18 54.84	2.18670	70.94	—10 20 22.7	+2.84850
17	230	II. L.	21 51 51.36	2 18176	70.52	— 7 54 5.2	+2.87783
17	230	II. U.	22 22 5.13	2.17679	70.12	— 5 19 31.8	+2.89653
18	231	II. L.	22 51 59.14	2.17213	69.75	— 2 39 57.8	+2.90574
18	231	II. U.	23 21 35.66	2.16841	69.44	+ 0 1 21.1	+2.90617
19	232	II. L.	23 50 57.66	2.16527	69.20	+ 2 41 15.4	+2.89818
19	233	II. U.	0 20 8.37	2.16286	69.03	+ 5 16 47.5	+2.88201
20	233	II. L.	0 49 10.90	2.16122	68.91	+ 7 45 15.0	+2.85757
20	234	II. U.	1 18 7.97	2.16011	68.86	+10 4 14.1	+2.82452

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Aug. 21	234	II. L.	1 47 1.52	2.15942	68.83	+12 11 40.3	+2.78197
21	235	II. U.	2 15 52.61	2.15887	68.81	+14 5 49.5	+2.72843
22	235	II. L.	2 44 41.27	2.15815	68.77	+15 45 18.5	+2.66172
22	236	II. U.	3 13 26.52	2.15706	68.70	+17 9 4.1	+2.57761
23	236	II. L.	3 42 6.33	2.15534	68.57	+18 16 22.5	+2.46909
23	237	II. U.	4 10 37.85	2.15281	68.36	+19 6 48.4	+2.32160
24	237	II. L.	4 38 57.66	2.14931	68.08	+19 40 14.7	+2.09621
24	238	II. U.	5 7 2.00	2.14482	67.71	+19 56 50.5	+1.61700
25	238	II. L.	5 34 47.09	2.13931	67.25	+19 56 59.7	—1.59550
25	239	II. U.	6 2 9.53	2.13290	66.73	+19 41 19.0	—2.06707
26	239	II. L.	6 29 6.45	2.12571	66.13	+19 10 35.8	—2.27807
26	240	II. U.	6 55 35.76	2.11793	65.48	+18 25 46.4	—2.41111
27	240	II. L.	7 21 36.29	2.10985	64.83	+17 27 53.1	—2.50556
27	241	II. U.	7 47 7.73	2.10164	64.16	+16 18 3.0	—2.57657
28	241	II. L.	8 12 10.70	2.09360	63.51	+14 57 26.7	—2.63144
28	242	II. U.	8 36 46.64	2.08593	62.90	+13 27 15.4	—2.67486
29	242	II. L.	9 0 57.71	2.07886	62.35	+11 48 39.9	—2.70927
29	243	II. U.	9 24 46.69	2.07265	61.87	+10 2 53.1	—2.73632
30	243	II. L.	9 48 16.88	2.06741	61.47	+ 8 11 6.1	—2.75740
30	244	II. U.	10 11 32.01	2.06341	61.16	+ 6 14 28.9	—2.77327
31	244	II. L.	10 34 36.15	2.06066	60.95	+ 4 14 11.3	—2.78440
Sept. 1	245	I. U.	10 55 31.91	2.05930	60.85	+ 2 11 22.0	—2.79134
1	245	I. L.	11 18 27.17	2.05937	60.85	+ 0 7 9.9	—2.79421
2	246	I. U.	11 41 24.65	2.06092	60.97	— 1 57 16.6	—2.79302
2	247	I. L.	12 4 29.11	2.06397	61.20	— 4 0 48.5	—2.78774
3	247	I. U.	12 27 45.30	2.06845	61.55	— 6 2 15.3	—2.77822
3	248	I. L.	12 51 17.95	2.07427	62.00	— 8 0 25.4	—2.76388
4	248	I. U.	13 15 11.69	2.08146	62.55	— 9 54 5.1	—2.74421
4	249	I. L.	13 39 30.96	2.08976	63.20	—11 41 58.0	—2.71825
5	249	I. U.	14 4 19.84	2.09906	63.94	—13 22 44.8	—2.68467
5	250	I. L.	14 29 41.99	2.10897	64.73	—14 55 2.9	—2.64147
6	250	I. U.	14 55 40.33	2.11939	65.56	—16 17 27.2	—2.58524
6	251	I. L.	15 22 16.91	2.13001	66.42	—17 28 30.3	—2.51108
7	251	I. U.	15 49 32.79	2.14044	67.27	—18 26 43.4	—2.40909
7	252	I. L.	16 17 27.63	2.15033	68.09	—19 10 39.4	—2.25912
8	252	I. U.	16 45 59.74	2.15936	68.84	—19 38 55.7	—2.00000
8	253	I. L.	17 15 6.03	2.16726	69.49	—19 50 16.8	—1.10721
9	253	I. U.	17 44 41.99	2.17380	70.04	—19 43 40.5	+1.89982
9	254	I. L.	18 14 42.11	2.17880	70.45	—19 18 20.5	+2.24130
10	254	I. U.	18 45 0.10	2.18216	70.72	—18 33 52.8	+2.43201
10	255	I. L.	19 15 29.48	2.18401	70.85	—17 30 18.1	+2.56241
11	255	I. U.	19 46 4.09	2.18446	70.85	—16 8 5.7	+2.65916
11	256	I. L.	20 16 38.43	2.18384	70.76	—14 28 14.3	+2.73336
12	256	I. U.	20 47 8.32	2.18233	70.61	—12 32 12.2	+2.79064
12	257	I. L.	21 17 30.86	2.18036	70.42	—10 21 55.9	+2.83455
13	257	I. U.	21 47 44.58	2.17817	70.19	— 7 59 47.0	+2.86682
13	258	I. L.	22 17 49.32	2.17615	70.00	— 5 28 28.7	+2.88902
14	258	I. U.	22 47 46.12	2.17441	69.84	— 2 50 59.9	+2.90179
14	259	I. L.	23 17 36.72	2.17319	69.74	— 0 10 28.8	+2.90569
15	259	II. U.	23 49 42.65	2.17251	69.68	+ 2 29 51.2	+2.90075

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Sept. 16	260	II. L.	0 19 27.41	2.17237	69.67	+ 5 6 49.5	+2.88722
16	261	II. U.	0 49 12.32	2.17251	69.70	+ 7 37 23.7	+2.86451
17	261	II. L.	1 18 58.51	2.17289	69.76	+ 9 58 45.7	+2.83219
17	262	II. U.	1 48 46.20	2.17321	69.80	+12 8 25.9	+2.78916
18	262	II. L.	2 18 34.51	2.17313	69.84	+14 4 18.6	+2.73368
18	263	II. U.	2 48 21.29	2.17246	69.82	+15 44 39.7	+2.66314
19	263	II. L.	3 18 3.40	2.17085	69.72	+17 8 14.5	+2.57345
19	264	II. U.	3 47 36.74	2.16811	69.53	+18 14 16.7	+2.45545
20	264	II. L.	4 16 56.64	2.16414	69.23	+19 2 23.4	+2.29137
20	265	II. U.	4 45 58.22	2.15893	68.83	+19 32 34.4	+2.02816
21	265	II. L.	5 14 36.73	2.15253	68.32	+19 45 13.4	+1.30750
21	266	II. U.	5 42 48.01	2.14504	67.73	+19 40 58.8	—1.79239
22	266	II. L.	6 10 28.71	2.13669	67.05	+19 20 43.6	—2.14457
22	267	II. U.	6 37 36.55	2.12772	66.34	+18 45 30.1	—2.32552
23	267	II. L.	7 4 10.33	2.11836	65.59	+17 56 27.2	—2.44373
23	268	II. U.	7 30 10.03	2.10897	64.85	+16 54 47.2	—2.52866
24	268	II. L.	7 55 36.65	2.09978	64.13	+15 41 43.2	—2.59295
24	269	II. U.	8 20 32.10	2.09114	63.44	+14 18 28.6	—2.64306
25	269	II. L.	8 44 59.11	2.08318	62.81	+12 46 14.8	—2.68269
25	270	II. U.	9 9 0.99	2.07613	62.25	+11 6 11.7	—2.71425
26	270	II. L.	9 32 41.58	2.07026	61.78	+ 9 19 27.7	—2.73918
26	271	II. U.	9 56 5.04	2.06573	61.40	+ 7 27 9.7	—2.75853
27	271	II. L.	10 19 15.81	2.06251	61.13	+ 5 30 22.9	—2.77320
27	272	II. U.	10 42 18.45	2.06074	60.96	+ 3 30 13.1	—2.78340
28	272	II. L.	11 5 17.70	2.06043	60.90	+ 1 27 45.7	—2.78972
28	273	II. U.	11 28 18.24	2.06160	60.95	— 0 35 51.9	—2.79183
29	273	II. L.	11 51 24.81	2.06427	61.11	— 2 39 31.5	—2.78993
29	274	II. U.	12 14 42.05	2.06833	61.40	— 4 42 2.1	—2.78362
30	275	I. L.	12 36 10.80	2.07364	61.81	— 6 42 10.4	—2.77276
Oct. 1	275	I. U.	13 0 1.58	2.08019	62.30	— 8 38 40.0	—2.75679
1	276	I. L.	13 24 15.48	2.08771	62.86	—10 30 11.0	—2.73464
2	276	I. U.	13 48 56.04	2.09611	63.50	—12 15 21.1	—2.70552
2	277	I. L.	14 14 6.33	2.10503	64.20	—13 52 45.7	—2.66773
3	277	I. U.	14 39 48.52	2.11418	64.94	—15 20 58.8	—2.61878
3	278	I. L.	15 6 3.97	2.12346	65.70	—16 38 33.7	—2.55509
4	278	I. U.	15 32 53.14	2.13245	66.45	—17 44 4.9	—2.47012
4	279	I. L.	16 0 15.29	2.14092	67.16	—18 36 10.5	—2.35180
5	279	I. U.	16 28 8.43	2.14857	67.80	—19 13 34.5	—2.17173
5	280	I. L.	16 56 29.54	2.15509	68.38	—19 35 10.6	—1.82543
6	280	I. U.	17 25 14.36	2.16041	68.84	—19 40 3.9	+1.27184
6	281	I. L.	17 54 18.08	2.16453	69.20	—19 27 34.0	+2.02816
7	281	I. U.	18 23 35.74	2.16717	69.43	—18 57 16.3	+2.29203
7	282	I. L.	18 53 1.99	2.16859	69.56	—18 9 9.7	+2.45469
8	282	I. U.	19 22 31.94	2.16885	69.59	—17 3 31.1	+2.56949
8	283	I. L.	19 52 1.62	2.16832	69.53	—15 40 57.2	+2.65629
9	283	I. U.	20 21 28.04	2.16729	69.43	—14 2 27.2	+2.72444
9	284	I. L.	20 50 49.56	2.16601	69.30	—12 9 21.3	+2.77772
10	284	I. U.	21 20 5.72	2.16471	69.17	—10 3 17.4	+2.81921
10	285	I. L.	21 49 17.27	2.16373	69.05	— 7 46 12.6	+2.85077
11	285	I. U.	22 18 26.04	2.16337	68.98	— 5 20 20.8	+2.87344

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Oct. 11	286	I. L.	22 47 34.45	2.16373	68.98	— 2 48 11.1	+2.88762
12	286	I. U.	23 16 45.64	2.16483	69.03	— 0 12 24.2	+2.89387
12	287	I. L.	23 46 2.76	2.16673	69.16	+ 2 24 8.2	+2.89198
13	288	I. U.	0 15 28.64	2.16920	69.34	+ 4 58 28.9	+2.88156
13	288	I. L.	0 45 5.56	2.17214	69.58	+ 7 27 40.3	+2.86201
14	289	I. U.	1 14 54.85	2.17519	69.83	+ 9 48 48.9	+2.83321
15	289	II. L.	1 47 16.52	2.17806	70.07	+11 59 10.6	+2.79323
15	290	II. U.	2 17 29.19	2.18024	70.27	+13 56 19.5	+2.73065
16	290	II. L.	2 47 49.21	2.18139	70.40	+15 38 10.5	+2.67025
16	291	II. U.	3 18 11.65	2.18127	70.41	+17 3 5.2	+2.57978
17	291	II. L.	3 48 30.40	2.17958	70.30	+18 9 55.1	+2.45924
17	292	II. U.	4 18 38.42	2.17609	70.05	+18 58 4.9	+2.28713
18	292	II. L.	4 48 28.48	2.17082	69.66	+19 27 27.6	+2.00000
18	293	II. U.	5 17 53.57	2.16388	69.12	+19 38 25.1	+0.98677
19	293	II. L.	5 46 47.75	2.15543	68.47	+19 31 42.8	—1.88081
19	294	II. U.	6 15 6.34	2.14582	67.72	+19 8 22.5	—2.19340
20	294	II. L.	6 42 46.04	2.13542	66.90	+18 29 40.1	—2.36116
20	295	II. U.	7 9 45.49	2.12447	66.06	+17 36 57.7	—2.47159
21	295	II. L.	7 36 4.65	2.11354	65.22	+16 31 40.5	—2.55096
21	296	II. U.	8 1 45.03	2.10298	64.41	+15 15 12.8	—2.61066
22	296	II. L.	8 26 49.26	2.09300	63 64	+13 48 56.3	—2.65686
22	297	II. U.	8 51 20.89	2.08393	62.96	+12 14 8.8	—2.69294
23	297	II. L.	9 15 24.11	2.07617	62.36	+10 32 3.4	—2.72156
23	298	II. U.	9 39 3.81	2.07019	61.86	+ 8 43 48.8	—2.74414
24	298	II. L.	10 2 25.16	2.06498	61.47	+ 6 50 29.9	—2.76163
24	299	II. U.	10 25 33.47	2.06175	61.20	+ 4 53 10.0	—2.77452
25	299	II. L.	10 48 34.21	2.06028	61.06	+ 2 52 51.1	—2.78340
25	300	II. U.	11 11 32.91	2.06058	61.04	+ 0 50 33.7	—2.78859
26	300	II. L.	11 34 35.03	2.06258	61.14	— 1 12 39.5	—2.79000
26	301	II. U.	11 57 46.01	2.06610	61.37	— 3 15 42.7	—2.78732
27	302	II. L.	12 21 11.03	2.07122	61.70	— 5 17 27.6	—2.78053
27	302	II. U.	12 44 55.03	2.07784	62.15	— 7 16 42.1	—2.76908
28	303	II. L.	13 9 2.53	2.08558	62.70	— 9 12 8.2	—2.75220
28	303	II. U.	13 33 37.63	2.09423	63.32	—11 2 21.7	—2.72000
29	304	II. L.	13 58 43.84	2.10370	64.02	—12 45 55.9	—2.69793
29	304	I. U.	14 22 14.13	2.11354	64.76	—14 21 19.2	—2.65696
30	305	I. L.	14 48 27.52	2.12330	65.53	—15 46 56.8	—2.60336
31	305	I. U.	15 15 16.36	2.13261	66.28	—17 1 15.7	—2.53224
31	306	I. L.	15 42 39.61	2.14132	67.01	—18 2 43.0	—2.43584
Nov. 1	306	I. U.	16 10 34.82	2.14916	67.66	—18 49 54.7	—2.29710
1	307	I. L.	16 38 58.09	2.15564	68.22	—19 21 36.2	—2.07188
2	307	I. U.	17 7 44.31	2.16062	68.66	—19 36 46.1	—1.52504
2	308	I. L.	17 36 47.40	2.16391	68.97	—19 34 41.4	+1.73878
3	308	I. U.	18 6 0.87	2.16554	69.16	—19 14 59.1	+2.15503
3	309	I. L.	18 35 18.44	2.16572	69.20	—18 37 36.4	+2.36305
4	309	I. U.	19 4 34.15	2.16456	69.14	—17 42 54.5	+2.49982
4	310	I. L.	19 33 43.14	2.16236	68.98	—16 31 33.3	+2 59890
5	310	I. U.	20 2 41.90	2.15942	68.77	—15 4 31.5	+2.67431
5	311	I. L.	20 31 28.46	2.15622	68.52	—13 23 5.4	+2.73312
6	311	I. U.	21 0 2.50	2.15314	68.27	—11 28 44.4	+2.77909

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Nov. 6	312	I. L.	21 28 25.11	2.15057	68.05	− 9 23 10.0	+2.81485
7	312	I. U.	21 56 38.73	2.14860	67.88	− 7 8 14.2	+2.84186
7	313	I. L.	22 24 46.85	2.14780	67.79	− 4 45 57.7	+2.86106
8	313	I. U.	22 52 53.67	2.14811	67.78	− 2 18 29.8	+2.87286
8	314	I. L.	23 21 3.70	2.14965	67.88	+ 0 11 51.8	+2.87795
9	314	I. U.	23 49 21.78	2.15235	68.07	+ 2 42 43.2	+2.87587
9	315	I. L.	0 17 52.30	2.15609	68.35	+ 5 11 35.1	+2.86629
10	316	I. U.	0 46 38.99	2.16056	68.67	+ 7 35 52.0	+2.84862
10	316	I. L.	1 15 44.61	2.16554	69.05	+ 9 52 59.4	+2.82178
11	317	I. U.	1 45 10.51	2.17058	69.44	+12 0 25.1	+2.78455
11	317	I. L.	2 14 56.32	2.17516	69.80	+13 55 44.1	+2.73448
12	318	I. U.	2 44 59.60	2.17883	70.10	+15 36 47.0	+2.66857
12	318	I. L.	3 15 15.85	2.18116	70.31	+17 1 41.0	+2.58149
13	319	II. U.	3 47 59.54	2.18181	70.37	+18 9 0.2	+2.46359
14	319	II. L.	4 18 21.30	2.18050	70.27	+18 57 47.9	+2.29403
14	320	II. U.	4 48 33.14	2.17696	70.01	+19 27 39.5	+2.00860
15	320	II. L.	5 18 26.10	2.17129	69.57	+19 38 41.1	+0.94448
15	321	II. U.	5 47 52.05	2.16370	68.99	+19 31 28.5	−1.90309
16	321	II. L.	6 16 44.29	2.15448	68.27	+19 7 0.3	−2.21325
16	322	II. U.	6 44 57.62	2.14401	67.46	+18 26 33.1	−2.37967
17	322	II. L.	7 12 28.90	2.13268	66 59	+17 31 36.4	−2.48911
17	323	II. U.	7 39 16.95	2.12100	65.71	+16 23 44.4	−2.56703
18	323	II. L.	8 5 22.38	2.10948	64.83	+15 4 31.4	−2.62511
18	324	II. U.	8 30 47.54	2.09844	64.02	+13 35 30.2	−2.66941
19	324	II. L.	8 55 35.78	2.08824	63.27	+11 58 7.9	−2.70364
19	325	II. U.	9 19 51.36	2.07929	62.60	+10 13 45.3	−2.73022
20	325	II. L.	9 43 39.44	2.07181	62.05	+ 8 23 37.2	−2.75059
20	326	II. U.	10 7 5.70	2.06595	61.62	+ 6 28 52.3	−2.76597
21	326	II. L.	10 30 15.90	2.06194	61.31	+ 4 30 35.2	−2.77706
21	327	II. U.	10 53 16.21	2.05987	61.14	+ 2 29 46.4	−2.78433
22	327	II. L.	11 16 12.83	2.05971	61.11	+ 0 27 25.4	−2.78810
22	328	II. U.	11 39 11.95	2.06153	61.22	− 1 35 29.6	−2.78838
23	329	II. L.	12 2 19.72	2.06524	61.45	− 3 37 58.2	−2.78490
23	329	II. U.	12 25 42.19	2.07070	61.82	− 5 38 56.9	−2.77764
24	330	II. L.	12 49 25.17	2.07780	62.31	− 7 37 17.7	−2.76574
24	330	II. U.	13 13 34.07	2.08636	62.90	− 9 31 47.1	−2.74873
25	331	II. L.	13 38 13.89	2.09614	63.60	−11 21 4.3	−2.72518
25	331	II. U.	14 3 28.85	2.10684	64.37	−13 3 42.6	−2.69373
26	332	II. L.	14 29 22.28	2.11790	65.20	−14 38 7.6	−2.65205
26	332	II. U.	14 55 56.19	2.12908	66.04	−16 2 40.3	−2.59693
27	333	II. L.	15 23 11.19	2.13991	66.89	−17 15 39.5	−2.52297
27	333	II. U.	15 51 6.09	2.14993	67.68	−18 15 23.9	−2.41963
28	334	II. L.	16 19 37.86	2.15869	68.39	−19 0 18.2	−2.26741
29	334	I. U.	16 46 23.54	2.16575	68.98	−19 28 58.3	−2.00689
29	335	I. L.	17 15 51.57	2.17099	69.44	−19 40 15.7	−1.10721
30	335	I. U.	17 45 37.30	2.17423	69.72	−19 33 25.2	+1.90309
30	336	I. L.	18 15 32.22	2.17531	69.83	−19 8 6.2	+2.23754
Dec. 1	336	I. U.	18 45 27.79	2.17438	69.80	−18 24 26.0	+2.42062
1	337	I. L.	19 15 16.34	2.17173	69.61	−17 22 59.4	+2.54419
2	337	I. U.	19 44 51.49	2.16779	69.32	−16 4 47.2	+2.63428

WASHINGTON MERIDIAN.

Mean Solar Date.		Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
		d		h m s		s	° ′ ″	
Dec.	2	338	I. L.	20 14 8 70	2.16289	68.95	—14 31 10.6	+2.70243
	3	338	I. U.	20 43 5.39	2.15758	68.55	—12 43 48.6	+2.75442
	3	339	I. L.	21 11 41.04	2.15238	68.15	—10 44 32.7	+2.79442
	4	339	I. U.	21 39 56.83	2.14761	67.79	— 8 35 21.7	+2.82426
	4	340	I. L.	22 7 55.65	2.14376	67.49	— 6 18 21.2	+2.84578
	5	340	I. U.	22 35 41.43	2.14101	67.27	— 3 55 38.7	+2.85992
	5	341	I. L.	23 3 19.10	2.13966	67.16	— 1 29 22.7	+2.86723
	6	341	I. U.	23 30 53.96	2.13975	67.15	+ 0 58 15.9	+2.86806
	6	342	I. L.	23 58 31.55	2.14123	67.26	+ 3 25 6.4	+2.86249
	7	343	I. U.	0 26 17.22	2.14407	67.47	+ 5 48 57.7	+2.85009
	7	343	I. L.	0 54 15.78	2.14805	67.76	+ 8 7 37.8	+2.83040
	8	344	I. U.	1 22 31.18	2.15281	68.10	+10 18 55.8	+2.80243
	8	344	I. L.	1 51 6.08	2.15797	68.50	+12 20 43.1	+2.76470
	9	345	I. U.	2 20 1.67	2.16313	68.90	+14 10 55.4	+2.71500
	9	345	I. L.	2 49 17.32	2.16776	69.23	+15 47 38.1	+2.65021
	10	346	I. U.	3 18 50.30	2.17146	69.48	+17 9 8.8	+2.56467
	10	346	I. L.	3 48 35.89	2.17374	69.67	+18 14 3.1	+2.44871
	11	347	I. U.	4 18 27.72	2.17423	69.73	+19 1 19.1	+2.28126
	11	347	I. L.	4 48 18.03	2.17272	69.60	+19 30 20.9	+1.99607
	12	348	I. U.	5 17 58.35	2.16911	69.30	+19 41 0.7	+0.88649
	13	348	II. L.	5 49 37.85	2.16343	68 84	+19 33 38.2	—1.90795
	13	349	II. U.	6 18 32.26	2.15588	68.24	+19 8 59.0	—2.21696
	14	349	II. L.	6 46 53.78	2.14681	67.53	+18 28 9.2	—2.38435
	14	350	II. U.	7 14 37.80	2.13653	66.74	+17 32 31.0	—2.49499
	15	350	II. L.	7 41 41.59	2.12561	65.90	+16 23 36.7	—2.57403
	15	351	II. U.	8 8 4.32	2.11438	65.06	+15 3 3.1	—2.63266
	16	351	II. L.	8 33 46.83	2.10332	64.24	+13 32 27.3	—2.67706
	16	352	II. U.	8 58 51.52	2.09286	63.48	+11 53 23.3	—2.71096
	17	352	II. L.	9 23 21.92	2.08343	62.80	+10 7 19.3	—2.73679
	17	353	II. U.	9 47 22.44	2.07518	62.22	+ 8 15 38.2	—2.75610
	18	353	II. L.	10 10 58.25	2.06845	61.74	+ 6 19 35.6	—2.77019
	18	354	II. U.	10 34 14.94	2.06348	61.40	+ 4 20 21.3	—2.77988
	19	354	II. L.	10 57 18.45	2.06040	61.18	+ 2 19 0.2	—2.78561
	19	355	II. U.	11 20 14.96	2.05915	61.11	+ 0 16 32.8	—2.78774
	20	355	II. L.	11 43 10.77	2.05998	61.17	— 1 46 1.9	—2.78647
	20	356	II. U.	12 6 12.26	2.06281	61.37	— 3 47 46.0	—2.78168
	21	357	II. L.	12 29 25.77	2.06759	61.70	— 5 47 39.8	—2.77320
	21	357	II. U.	12 52 57.56	2.07419	62.16	— 7 44 41.1	—2.76042
	22	358	II. L.	13 16 53.70	2.08246	62.76	— 9 37 42.8	—2.74280
	22	358	II. U.	13 41 19.89	2.09219	63.46	—11 25 32.1	—2.71933
	23	359	II. L.	14 6 21.31	2.10305	64.25	—13 6 49.0	—2.68806
	23	359	II. U.	14 32 2.35	2.11478	65.11	—14 40 6.0	—2.64719
	24	360	II. L.	14 58 26.39	2.12688	66.03	—16 3 48.5	—2.59306
	24	360	II. U.	15 25 35.34	2.13903	66.95	—17 16 16.2	—2.52009
	25	361	II. L.	15 53 29.45	2.15051	67.85	—18 15 45.7	—2.41863
	25	361	II. U.	16 22 6.89	2.16104	68.68	—19 0 35.5	—2.26647
	26	362	II. L.	16 51 23.77	2.17011	69.41	—19 29 10.4	—1.99957
	26	362	II. U.	17 21 14.00	2.17728	69.99	—19 40 8.8	—0.95424
	27	363	II. L.	17 51 29.71	2.18224	70.39	—19 32 29.6	+1.93399
	27	363	II. U.	18 22 1.69	2.18492	70.61	—19 5 38.7	+2.26126

WASHINGTON MERIDIAN.

Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d		h m s		s	° ′ ″	
Dec. 28	364	I. L.	18 50 18.93	2.18531	70.66	—18 19 32.7	+2.44404
29	364	I. U.	19 20 55.01	2.18361	70.52	—17 14 41.8	+2.56761
29	365	I. L.	19 51 20.29	2.18010	70.24	—15 52 8.4	+2 65763
30	365	I. U.	20 21 28.26	2.17522	69.86	—14 13 24.1	+2.72526
30	366	I. L.	20 51 14.50	2.16953	69.42	—12 20 24.4	+2.77605
31	366	I. U.	21 20 36.73	2.16352	68.96	—10 15 20.0	+2.81398
31	367	I. L.	21 49 34.94	2.15767	68.49	— 8 0 35.7	+2.84123

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	35 Piscium.	*d* Piscium.	44 Piscium.	13 Ceti.	δ Piscium.	20 Ceti.	
	$0^{h}\ 7^{m}$	$0^{h}\ 13^{m}$	$0^{h}\ 18^{m}$	$0^{h}\ 28^{m}$	$0^{h}\ 41^{m}$	$0^{h}\ 46^{m}$	
d	s	s	s	s	s	s	
14	59.21	36.93	26.63	15.49	38.58	4.37	—.011
41	58.96	36.67	26.36	15.22	38.28	4.07	—.006
124	59.47	37.14	26.78	15.56	38.54	4.28	+.018
151	60.16	37.83	27.46	16.22	39.17	4.90	.028
178	60.99	38.65	28.27	17.03	39.98	5.69	.030
206	61.82	39.48	29.10	17.86	40.83	6.53	.027
233	62.44	40.11	29.74	18.53	41.51	7.22	.020
261	62.82	40.50	30.13	18.95	41.97	7.68	.010
288	62.90	40.60	30.25	19.08	42.15	7.87	+.001
316	62.76	40.48	30.13	18.99	42.10	7.82	—.007
343	62.50	40.22	29.88	18.75	41.89	7.61	—.011
Dec. =	+ 8° 4′	+ 7° 26′	+ 1° 11′	— 4° 21′	+ 6° 51′	— 1° 53′	
Mag. =	6	6.5	6	6.5	4.5	5.6	
	ε Piscium.	*e* Piscium.	ζ¹ Piscium.	40 Ceti.	μ Piscium.	η Piscium.	
	$0^{h}\ 55^{m}$	$1^{h}\ 1^{m}$	$1^{h}\ 6^{m}$	$1^{h}\ 10^{m}$	$1^{h}\ 23^{m}$	$1^{h}\ 24^{m}$	
	s	s	s	s	s	s	
15	54.48	22.88	38.81	2.15	4.76	13.89	—.012
42	54.16	22.55	38.48	1.82	4.42	13.53	.011
70	53.96	22.33	38.25	1.58	4.15	13.25	—.002
152	54.96	23.28	39.18	2.45	4.96	14.08	+.026
179	55.76	24.07	39.97	3.23	5.73	14.87	.030
207	56.61	24.92	40.82	4.08	6.59	15.75	.029
234	57.30	25.62	41.53	4.79	7.32	16.50	.023
261	57.77	26.10	42.03	5.29	7.85	17.04	.015
289	57.99	26.33	42.28	5.54	8.14	17.36	+.006
316	57.98	26.33	42.29	5.56	8.20	17.42	—.003
344	57.79	26.15	42.12	5.38	8.06	17.28	—.008
Dec. =	+ 7° 10′	+ 4° 56′	+ 6° 51′	— 2° 59′	+ 5° 26′	+ 14° 39′	
Mag. =	4	6.5	5.4	6	5	4.3	
	π Piscium.	ν Piscium.	*o* Piscium.	ι Arietis.	ξ¹ Ceti.	θ Arietis.	
	$1^{h}\ 29^{m}$	$1^{h}\ 34^{m}$	$1^{h}\ 38^{m}$	$1^{h}\ 49^{m}$	$2^{h}\ 5^{m}$	$2^{h}\ 10^{m}$	
	s	s	s	s	s	s	
15	54.75	22.54	14.15	57.03	49.04	35.62	—.013
43	54.38	22.18	13.78	56.64	48.65	35.20	.013
70	54.10	21.90	13.49	56.31	48.32	34.84	—.005
153	54.90	22.64	14.22	56.99	48.84	35.36	+.022
180	55.68	23.40	14.98	57.76	49.56	36.12	.030
207	56.52	24.22	15.81	58.62	50.43	36.98	.030
235	57.29	24.99	16.59	59.43	51.19	37.82	.025
262	57.83	25.53	17.15	60.03	51.80	38.47	.019
290	58.14	25.85	17.48	60.41	52.20	38.92	.010
317	58.22	25.93	17.57	60.55	52.37	39.11	+.001
345	58.09	25.80	17.46	60.46	52.32	39.08	—.005
Dec. =	+ 11° 27′	+ 4° 48′	+ 8° 28′	+ 17° 9′	+ 8° 12′	+ 19° 16′	
Mag. =	6	5.4	4	6	4.5	6.5	
	ξ² Ceti.	38 Arietis.	π Arietis.	ρ³ Arietis.	ε Arietis.	53 Arietis.	
	$2^{h}\ 20^{m}$	$2^{h}\ 37^{m}$	$2^{h}\ 41^{m}$	$2^{h}\ 48^{m}$	$2^{h}\ 51^{m}$	$2^{h}\ 59^{m}$	
	s	s	s	s	s	s	
16	57.36	34.84	44.12	47.22	28.24	48.16	—.012
44	56.96	34.44	43.70	46.80	27.81	47.74	.015
71	56.61	34.06	43.30	46.39	27.39	47.31	—.009
154	57.04	34.39	43.62	46.66	27.64	47.50	+.018
181	57.76	35.08	44.32	47.35	28.34	48.17	.028
208	58.57	35.90	45.16	48.19	29.19	48.99	.031
236	59.38	36.73	46.00	49.05	30.06	49.85	.028
263	60.01	37.40	46.69	49.75	30.78	50.57	.022
291	60.45	37.89	47.20	50.28	31.33	51.13	.014
318	60.65	38.14	47.48	50.58	31.64	51.46	+.006
345	60.64	38.17	47.52	50.64	31.71	51.55	—.002
Dec. =	+ 7° 51′	+ 11° 52′	+ 16° 54′	+ 17° 29′	+ 20° 48′	+ 17° 21′	
Mag. =	4	5	6.5	6	4.5	6	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	δ Arietis.	ζ Arietis.	τ^1 Arietis.	9 Tauri.	17 Tauri.	η Tauri.	
	3^h 3^m	3^h 7^m	3^h 13^m	3^h 28^m	3^h 36^m	3^h 39^m	
d	s	s	s	s	s	s	
17	53.23	7.23	24.58	60.39	50.28	26.37	—.011
45	52.81	6.80	24.16	59.96	49.86	25.94	.016
72	52.38	6.36	23.72	59.50	49.38	25.46	.014
99	52.11	6.09	23.43	59.18	49.05	25.13	—.005
182	53.25	7.21	24.50	60.15	49.97	26.02	+.025
209	54.08	8.04	25.33	60.97	50.78	26.84	.030
236	54.92	8.89	26.18	61.83	51.65	27.70	.030
264	55.68	9.65	26.96	62.64	52.48	28.53	.025
291	56.23	10.22	27.54	63.27	53.12	29.18	.018
319	56.59	10.58	27.92	63.70	53.58	29.65	.011
346	56.68	10.69	28.04	63.87	53.77	29.85	+.001
Dec. =	+ 19° 13′	+ 20° 32′	+ 20° 39′	+ 22° 46′	+ 23° 41′	+ 23° 41′	
Mag. =	4.5	4.5	5	6	4	3	
	A^1 Tauri.	ω^2 Tauri.	δ^1 Tauri.	ν^1 Tauri.	ϵ Tauri.	α Tauri.	
	3^h 56^m	4^h 9^m	4^h 15^m	4^h 18^m	4^h 20^m	4^h 28^m	
	s	s	s	s	s	s	
18	41.64	19.96	7.77	12.55	42.83	9.36	—.009
46	41.23	19.56	7.39	12.16	42.46	9.01	.016
73	40.75	19.08	6.92	11.66	41.97	8.53	.016
100	40.40	18.70	6.54	11.27	41.58	8.14	—.008
182	41.19	19.39	7.17	11.90	42.18	8.66	+.022
210	41.97	20.15	7.91	12.66	42.91	9.38	.029
237	42.82	20.98	8.73	13.51	43.74	10.18	.031
265	43.65	21.82	9.55	14.36	44.57	11.01	.028
292	44.33	22.51	10.24	15.08	45.28	11.72	.022
320	44.83	23.04	10.77	15.64	45.83	12.28	.015
347	45.06	23.31	11.05	15.94	46.13	12.59	+.004
Dec. =	+ 21° 42′	+ 20° 14′	+ 17° 13′	+ 22° 30′	+ 18° 53′	+ 16° 14′	
Mag. =	5.4	6.5	4	5.4	4.3	1	
	τ Tauri.	*i* Tauri.	ι Aurigæ.	ι Tauri.	11 Orionis.	*n* Tauri.	
	4^h 34^m	4^h 43^m	4^h 48^m	4^h 54^m	4^h 56^m	5^h 11^m	
	s	s	s	s	s	s	
19	7.41	27.48	11.03	60.59	50.24	8.96	—.007
46	7.05	27.14	10.65	60.26	49.92	8.66	.016
74	6.53	26.63	10.07	59.75	49.43	8.14	.018
101	6.12	26.23	9.60	59.31	49.01	7.69	—.011
183	6.64	26.66	10.04	59.67	49.33	7.94	+.020
211	7.41	27.38	10.85	60.39	50.02	8.62	.028
238	8.24	28.19	11.75	61.21	50.80	9.42	.031
265	9.08	29.00	12.67	62.04	51.60	10.26	.030
293	9.82	29.77	13.54	62.83	52.37	11.08	.026
320	10.42	30.35	14.21	63.46	52.97	11.74	.019
348	10.78	30.72	14.64	63.87	53.37	12.20	+.008
Dec. =	+ 22° 40′	+ 18° 36′	+ 32° 57′	+ 21° 24′	+ 15° 13′	+ 21° 57′	
Mag. =	4.5	5.6	3	5	5	6	
	β Tauri.	o Tauri.	ζ Tauri.	129 Tauri.	136 Tauri.	1 Geminorum.	
	5^h 17^m	5^h 19^m	5^h 29^m	5^h 38^m	5^h 44^m	5^h 55^m	
	s	s	s	s	s	s	
20	44.43	30.61	33.64	58.82	49.52	53.92	—.005
47	44.09	30.31	33.36	58.56	49.23	53.68	.015
74	43.59	29.82	32.87	58.10	48.75	53.20	.018
102	43.09	29.34	32.39	57.62	48.23	52.70	.013
129	42.82	29.09	32.12	57.34	47.91	52.37	—.005
211	44.02	30.21	33.16	58.27	48.89	53.23	+.026
239	44.88	31.03	33.96	59.04	49.71	54.01	.030
266	45.76	31.86	34.79	59.83	50.57	54.84	.031
294	46.63	32.69	35.62	60.65	51.46	55.70	.029
321	47.34	33.36	36.31	61.33	52.22	56.46	.023
349	47.85	33.83	36.81	61.84	52.79	57.03	+.012
Dec. =	+ 28° 29′	+ 21° 49′	+ 21° 3′	+ 15° 46′	+ 27° 34′	+ 23° 16′	
Mag. =	2	6	3	6	5	5	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	η Geminorum.	κ Aurigæ.	μ Geminorum.	ν Geminorum.	49 Aurigæ.	ε Geminorum.	
	6^h 6^m	6^h 6^m	6^h 14^m	6^h 20^m	6^h 26^m	6^h 35^m	
d	s	s	s	s	s	s	
21	42.61	45.58	46.62	55.86	40.78	36.64	—.001
48	42.38	45.33	46.41	55.67	40.58	36.47	.013
75	41.91	44.83	45.95	55.22	40.11	36.03	.018
103	41.41	44.30	45.45	54.72	39.58	35.51	.016
130	41.07	43.94	45.10	54.37	39.20	35.12	—.008
212	41.88	44.79	45.85	55.06	39.88	35.73	+.023
240	42.64	45.59	46.59	55.78	40.63	36.44	.029
267	43.46	46.46	47.41	56.57	41.48	37.26	.031
294	44.29	47.34	48.25	57.41	42.36	38.12	.031
322	45.09	48.19	49.06	58.21	43.23	38.99	.027
349	45.66	48.80	49.65	58.81	43.88	39.64	+.016
Dec. =	+ 22° 33′	+ 29° 33′	+22° 35′	+ 20° 18′	+ 28° 8′	+ 25° 16′	
Mag. =	4	5.4	3	5.4	6.5	3.4	
	ω Geminorum.	ζ Geminorum.	τ Geminorum.	δ Geminorum.	ι Geminorum.	α² Geminor.	
	6^h 54^m	6^h 56^m	7^h 2^m	7^h 12^m	7^h 17^m	7^h 25^m	
	s	s	s	s	s	s	
22	10.15	5.18	31.74	2.68	19.53	58.24	+.004
49	10.01	5.05	31.62	2.59	19.44	58.17	—.010
76	9.59	4.64	31.18	2.19	19.04	57.76	.017
104	9.07	4.14	30.63	1.69	18.51	57.22	.017
131	8.68	3.75	30.20	1.28	18.08	56.75	.011
158	8.54	3.62	30.04	1.12	17.89	56.52	—.003
241	9.85	4.87	31.34	2.26	19.04	57.65	+.026
268	10.63	5.64	32.16	3.01	19.82	58.44	.031
295	11.50	6.48	33.07	3.86	20.70	59.36	.033
323	12.37	7.33	33.99	4.73	21.62	60.32	.030
350	13.06	8.00	34.74	5.45	22.39	61.13	+.020
Dec. =	+ 24° 24′	+ 20° 46′	+ 30° 28′	+ 22° 14′	+ 28° 4′	+ 32° 11′	
Mag. =	6	4	5.4	3.4	4	2.1	
	β Geminorum.	φ Geminorum.	6 Cancri.	12 Cancri.	ζ¹ Cancri.	λ Cancri.	
	7^h 37^m	7^h 45^m	7^h 55^m	8^h 1^m	8^h 4^m	8^h 12^m	
	s	s	s	s	s	s	
22	2.23	13.10	12.53	8.80	27.25	29.37	+.008
50	2.18	13.07	12.54	8.82	27.27	29.42	—.006
77	1.80	12.72	12.20	8.52	26.98	29.13	.015
104	1.28	12.21	11.68	8.07	26.53	28.66	.017
132	0.82	11.77	11.23	7.66	26.10	28.21	.013
159	0.60	11.53	10.98	7.42	25.86	27.94	—.004
241	1.59	12.45	11.83	8.15	26.58	28.63	+.023
269	2.38	13.21	12.58	8.81	27.25	29.31	.029
296	3.24	14.07	13.43	9.59	28.04	30.13	.032
324	4.17	15.01	14.39	10.46	28.94	31.06	.032
351	4.96	15.81	15.21	11.23	29.72	31.89	+.024
Dec. =	+ 28° 21′	+ 27° 7′	+ 28° 11′	+ 14° 2′	+ 18° 3′	+ 24° 27′	
Mag. =	1.2	5	5	6	5.4	6	
	θ Cancri.	γ Cancri.	δ Cancri.	ρ² Cancri.	α Cancri.	κ Cancri.	
	8^h 23^m	8^h 35^m	8^h 36^m	8^h 47^m	8^h 51^m	9^h 0^m	
	s	s	s	s	s	s	
23	52.96	27.39	59.80	33.16	5.36	25.35	+.012
51	53.03	27.51	59.90	33.30	5.50	25.51	—.002
78	52.77	27.24	59.66	33.07	5.30	25.33	.012
105	52.33	26.80	59.24	32.62	4.91	24.96	.016
133	51.90	26.37	58.81	32.15	4.50	24.55	.014
160	51.63	26.08	58.53	31.83	4.21	24.26	—.007
242	52.23	26.60	59.03	32.27	4.58	24.57	+.019
270	52.87	27.23	59.64	32.90	5.15	25.10	.026
297	53.65	28.01	60.41	33.70	5.87	25.81	.030
325	54.56	28.93	61.31	34.66	6.75	26.68	.032
352	55.37	29.77	62.14	35.56	7.57	27.51	+.027
Dec. =	+ 18° 33′	+ 21° 57′	+ 18° 39′	+ 28° 27′	+ 12° 23′	+ 11° 13′	
Mag. =	6	4.5	4	6	4	5	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	ξ Cancri.	83 Cancri.	λ Leonis.	ξ Leonis.	ο Leonis.	ε Leonis.	
	9ʰ 1ᵐ	9ʰ 11ᵐ	9ʰ 23ᵐ	9ʰ 24ᵐ	9ʰ 33ᵐ	9ʰ 38ᵐ	
d	s	s	s	s	s	s	
24	34.73	25.69	59.98	39.30	56.07	10.21	+.015
51	34.91	25.89	60.22	39.52	56.32	10.50	+.002
79	34.71	25.72	60.08	39.39	56.22	10.39	—.009
106	34.31	25.35	59.71	39.05	55.89	10.05	.014
134	33.87	24.93	59.27	38.65	55.50	9.65	.014
161	33.56	24.62	58.94	38.35	55.19	9.26	.009
188	33.44	24.49	58.78	38.20	55.03	9.07	—.002
270	34.47	25.41	59.62	38.98	55.74	9.80	+.023
298	35.24	26.15	60.36	39.68	56.43	10.52	.028
325	36.13	27.01	61.25	40.52	57.25	11.40	.033
353	37.03	27.90	62.17	41.39	58.13	12.34	+.030
Dec. =	+ 22° 36′	+ 18° 17′	+23° 34′	+ 11° 54′	+ 11° 31′	+ 24° 24′	
Mag. =	5	6	5.4	6	4.3	3	
	ν Leonis.	η Leonis.	α Leonis.	γ¹ Leonis.	45 Leonis.	ρ Leonis.	
	9ʰ 50ᵐ	9ʰ 59ᵐ	10ʰ 1ᵐ	10ʰ 12ᵐ	10ʰ 20ᵐ	10ʰ 25ᵐ	
	s	s	s	s	s	s	
25	56.73	57.39	10.19	30.58	30.26	41.29	+.018
52	57.02	57.71	10.50	30.94	30.62	41.67	+.006
80	56.95	57.66	10.45	30.93	30.63	41.68	—.006
107	56.65	57.37	10.17	30.65	30.39	41.46	.012
135	56.26	56.98	9.79	30.26	30.03	41.11	.013
162	55.95	56.65	9.47	29.92	29.72	40.80	.010
189	55.76	56.44	9.27	29.69	29.49	40.56	—.005
271	56.37	57.00	9.80	30.16	29.87	40.90	+.019
299	57.03	57.64	10.41	30.79	30.46	41.48	.026
326	57.86	58.49	11.25	31.63	31.26	42.28	.032
354	58.75	59.40	12.15	32.56	32.16	43.17	+.031
Dec. =	+ 13° 6′	+ 17° 26′	+ 12° 38′	+ 20° 32′	+ 10° 28′	+ 10° 0′	
Mag. =	5	3.4	1.2	2	6	4	
	37 Sextantis.	l Leonis.	c Leonis.	χ Leonis.	n Leonis.	σ Leonis.	
	10ʰ 39ᵐ	10ʰ 42ᵐ	10ʰ 53ᵐ	10ʰ 58ᵐ	11ʰ 8ᵐ	11ʰ 14ᵐ	
	s	s	s	s	s	s	
26	3.10	8.59	44.19	2.34	47.05	9.50	+.022
53	3.50	9.00	44.62	2.79	47.54	9.99	+.010
81	3.55	9.06	44.72	2.89	47.68	10.14	—.002
108	3.36	8.88	44.56	2.74	47.54	10.03	.009
135	3.03	8.54	44.25	2.43	47.24	9.75	.012
163	2.72	8.22	43.93	2.12	46.92	9.44	.011
190	2.47	7.97	43.67	1.85	46.64	9.17	.007
218	2.37	7.86	43.54	1.71	46.47	8.99	—.001
300	3.28	8.76	44.34	2.48	47.16	9.64	+.024
327	4.06	9.55	45.10	3.23	47.91	10.37	.031
355	4.96	10.45	46.00	4.12	48.82	11.26	+.031
Dec. =	+ 7° 5′	+ 11° 16′	+ 6° 50′	+ 8° 4′	+ 14° 3′	+ 6° 46′	
Mag. =	6	5	5	5	6	4	
	ι Leonis.	τ Leonis.	ν Virginis.	β Virginis.	π Virginis.	ο Virginis.	
	11ʰ 16ᵐ	11ʰ 20ᵐ	11ʰ 38ᵐ	11ʰ 43ᵐ	11ʰ 53ᵐ	11ʰ 58ᵐ	
	s	s	s	s	s	s	
27	52.20	58.86	54.29	38.77	56.26	18.95	+.024
54	52.69	59.34	54.82	39.31	56.83	19.53	.013
82	52.83	59.49	55.02	39.52	57.07	19.78	+.002
109	52.72	59.39	54.96	39.48	57.05	19.77	—.005
136	52.43	59.13	54.73	39.27	56.84	19.56	.010
164	52.11	58.82	54.43	38.98	56.55	19.27	.011
191	51.82	58.55	54.15	38.70	56.26	18.98	.009
219	51.67	58.37	53.94	38.49	56.03	18.73	—.004
301	52.32	58.99	54.41	38.94	56.39	19.06	+.021
328	53.05	59.71	55.10	39.62	57.05	19.71	.029
355	53.95	60.59	55.97	40.50	57.91	20.57	+.032
Dec. =	+ 11° 17′	+ 3° 36′	+ 7° 17′	+ 2° 32′	+ 7° 22′	+ 9° 29′	
Mag. =	4	5	4.5	3.4	4.5	4	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	Piazzi xii. 6.	13 Virginis.	η Virginis.	c Virginis.	q Virginis.	γ Virginis.	
	$12^h\ 4^m$	$12^h\ 11^m$	$12^h\ 12^m$	$12^h\ 13^m$	$12^h\ 26^m$	$12^h\ 34^m$	
d	s	s	s	s	s	s	
1	43.60	43.15	57.92	27.76	46.95	47.29	+.032
28	44.40	43.95	58.72	28.57	47.77	48.11	.026
55	44.97	44.54	59.31	29.16	48.40	48.75	.016
83	45.23	44.82	59.59	29.44	48.71	49.08	+.006
110	45.23	44.84	59.62	29.47	48.78	49.16	—.002
137	45.05	44.68	59.46	29.30	48.65	49.05	.008
165	44.77	44.41	59.19	29.03	48.40	48.80	.011
192	44.48	44.12	58.90	28.74	48.11	48.51	.011
220	44.23	43.87	58.65	28.48	47.83	48.23	—.007
320	45.19	44.78	59.53	29.35	48.60	48.90	+.026
356	46.04	45.61	60.37	30.19	49.44	49.72	+.031
Dec. =	+ 4° 49′	— 0° 2′	+0° 5′	+ 4° 4′	— 8° 42′	— 0° 42′	
Mag. =	6.7	6	3.4	5	6	3.2	
	38 Virginis.	ψ Virginis.	δ Virginis.	θ Virginis.	α Virginis.	ζ Virginis.	
	$12^h\ 46^m$	$12^h\ 47^m$	$12^h\ 48^m$	$13^h\ 2^m$	$13^h\ 18^m$	$13^h\ 27^m$	
	s	s	s	s	s	s	
2	14.60	18.22	46.26	55.63	2.79	46.78	+.032
29	15.43	19.06	47.09	56.47	3.65	47.63	.028
56	16.07	19.71	47.74	57.15	4.36	48.34	.020
83	16 43	20.08	48.11	57.56	4.81	48.81	.010
111	16.54	20.20	48.21	57.71	5.01	49.02	+.002
138	16.45	20.11	48.12	57.66	5.00	49.03	—.005
166	16.23	19.90	47.89	57.47	4.84	48.87	.009
193	15.94	19.60	47.50	57.18	4.55	48.59	.011
221	15.64	19.31	47.29	56.87	4.22	48.26	—.010
330	16.24	19.91	47.85	57.32	4.54	48.46	+.022
357	17.00	20.67	48.60	58.06	5.27	49.16	+.028
Dec. =	— 2° 49′	— 8° 48′	+ 4° 8′	— 4° 49′	— 10° 27′	+ 0° 6′	
Mag. =	6	5	3	4.5	1	3.4	
	m Virginis.	86 Virginis.	89 Virginis.	94 Virginis.	κ Virginis.	λ Virginis.	
	$13^h\ 34^m$	$13^h\ 38^m$	$13^h\ 42^m$	$13^h\ 59^m$	$14^h\ 5^m$	$14^h\ 11^m$	
	s	s	s	s	s	s	
3	29.48	42.54	30.05	6.52	39.47	46.05	+.032
30	30.35	43.42	30.95	7.40	40.35	46.94	.030
57	31.07	44.16	31.71	8.16	41.13	47.73	.024
84	31.57	44.66	32 24	8.71	41.69	48.31	.015
112	31.79	44.90	32.50	9.00	42.00	48.64	+.007
139	31.81	44.94	32.55	9.09	42.11	48.77	—.001
167	31.67	44.81	32.42	9.00	42.03	48.70	.007
194	31.40	44.53	32.13	8.74	41.78	48.46	.012
222	31.05	44.18	31.77	8.39	41.43	48.10	.013
249	30.75	43.87	31.44	8.05	41.08	47.74	—.008
358	32.04	45.14	32.71	9.11	42.09	48.71	+.024
Dec. =	— 8° 1′	— 11° 45′	— 17° 27′	— 8° 14′	— 9° 38′	— 12° 45′	
Mag. =	6	6	5	6	4.5	5.4	
	μ Virginis.	5 Libræ.	μ Libræ.	α Libræ.	ξ^2 Libræ.	20 Libræ.	
	$14^h\ 35^m$	$14^h\ 38^m$	$14^h\ 41^m$	$14^h\ 43^m$	$14^h\ 49^m$	$14^h\ 56^m$	
	s	s	s	s	s	s	
4	54.29	28.68	52.75	22.15	24.05	7.72	+.032
31	55.14	29.56	53.62	23.04	24.91	8.65	.032
58	55.93	30.37	54.43	23.86	25.72	9.53	.027
85	56.54	31.00	55.07	24.50	26.36	10.23	.019
113	56.93	31.43	55.50	24.93	26.81	10.73	.012
140	57.10	31.62	55.69	25.14	27.02	10.99	+.004
168	57.07	31.60	55.68	25.13	27.02	11.01	—.004
195	56.85	31.38	55.47	24.92	26.82	10.80	.010
222	56.51	31.03	55.12	24.56	26.48	10.43	.014
250	56 13	30.63	54.72	24.16	26.08	9.99	—.010
359	56.87	31.41	55.46	24.89	26.73	10.64	+.019
Dec. =	— 5° 4′	— 14° 53′	— 13° 35′	— 15° 28′	— 10° 52′	— 24°.45′	
Mag. =	4	6	6	2.3	6	3.4	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	ι^1 Libræ.	ζ^1 Libræ.	γ Libræ.	$\varkappa$ Libræ.	η Libræ.	λ Libræ.	
	$15^h\ 4^m$	$15^h\ 20^m$	$15^h\ 27^m$	$15^h\ 34^m$	$15^h\ 36^m$	$15^h\ 45^m$	
d	s	s	s	s	s	s	
4	28.95	35.79	55.52	7.28	26.08	26.91	+.030
31	29.85	36.66	56.38	8.16	26.94	27.77	.032
59	30.71	37.53	57.24	9.05	27.81	28.66	.029
86	31.40	38.24	57.95	9.78	28.53	29.42	.023
113	31.89	38.75	58.48	10.34	29.08	30.01	.016
141	32.16	39.06	58.81	10.70	29.44	30.40	+.008
168	32.20	39.14	58.89	10.81	29.55	30.54	—.001
196	32.01	38.98	58.75	10.67	29.42	30.42	.009
223	31.65	38.64	58.42	10.33	29.09	30.09	.015
251	31.21	38.20	57.98	9.90	28.64	29.63	—.013
360	31.81	38.63	58.33	10.20	28.93	29.85	+.013
Dec. =	— 19° 16′	— 16° 14′	— 14° 20′	— 19° 14′	— 15° 14′	— 19° 45′	
Mag. =	5.4	4	4.5	5	6	6	
	ϱ Scorpii.	δ Scorpii.	β^1 Scorpii.	σ Scorpii.	α Scorpii.	τ' Scorpii.	
	$15^h\ 48^m$	$15^h\ 52^m$	$15^h\ 57^m$	$16^h\ 12^m$	$16^h\ 21^m$	$16^h\ 27^m$	
	s	s	s	s	s	s	
5	30.07	18.03	32.13	55.76	4.54	25.48	+.029
32	31.01	18.92	33.00	56.64	5.41	26.36	.031
60	31.95	19.81	33.88	57.56	6.33	27.29	.031
87	32.76	20.59	34.65	58.38	7.17	28.15	.026
114	33.39	21.19	35.25	59.04	7.86	28.86	.020
142	33.79	21.58	35.65	59.50	8.34	29.36	.012
169	33.96	21.75	35.83	59.73	8.60	29.65	+.002
197	33.84	21.65	35.74	59.67	8.55	29.61	—.008
224	33.47	21.30	35.40	59.34	8.23	29.29	.015
251	32.98	20.84	34.95	58.86	7.75	28.81	.016
279	32.54	20.42	34.53	58.40	7.28	28.32	—.012
Dec. =	— 28° 49′	— 22° 14′	— 19° 26′	— 25° 16′	— 26° 8′	— 27° 56′	
Mag. =	5.4	2.3	2	3.4	1.2	3.4	
	24 Scorpii.	20 Ophiuchi.	η Ophiuchi.	A Ophiuchi.	ξ Ophiuchi.	θ Ophiuchi.	
	$16^h\ 33^m$	$16^h\ 42^m$	$17^h\ 2^m$	$17^h\ 7^m$	$17^h\ 12^m$	$17^h\ 13^m$	
	s	s	s	s	s	s	
33	43.45	19.46	35.52	0.16	52.00	40.31	+.028
60	44.31	20.28	36.36	1.05	52.85	41.19	.030
88	45.13	21.08	37.18	1.94	53.71	42.07	.028
115	45.79	21.73	37.89	2.70	54.46	42.84	.024
142	46.27	22.22	38.44	3.30	55.05	43.45	.016
170	46.52	22.48	38.76	3.66	55.41	43.82	+.006
197	46.50	22.47	38.80	3.72	55.49	43.90	—.004
225	46.21	22.20	38.56	3.46	55.26	43.66	.014
252	45.76	21.76	38.12	2.99	54.81	43.21	.017
280	45.30	21.30	37.64	2.47	54.31	42.69	.015
307	45.05	21.04	37.34	2.13	53.99	42.35	—.012
Dec. =	— 17° 29′	— 10° 32′	— 15° 33′	— 26° 24′	— 20° 58′	— 24° 52′	
Mag. =	5	5	2.3	5	5	3.4	
	b Ophiuchi.	c^2 Ophiuchi.	o Serpentis.	4 Sagittarii.	9 Sagittarii.	γ Sagittarii.	
	$17^h\ 18^m$	$17^h\ 23^m$	$17^h\ 33^m$	$17^h\ 51^m$	$17^h\ 55^m$	$17^h\ 57^m$	
	s	s	s	s	s	s	
34	4.74	8.03	46.90	29.83	32.55	5.03	+.027
61	5.61	8.89	47.70	30.66	33.38	5.90	.031
88	6.46	9.74	48.49	31.51	34.23	6.79	.030
116	7.26	10.55	49.26	32.35	35.08	7.69	.027
143	7.86	11.16	49.85	33.03	35.77	8.43	.020
171	8.25	11.56	50.24	33.50	36.26	8.94	+.011
198	8.32	11.65	50.34	33.66	36.42	9.12	—.001
226	8.08	11.42	50.14	33.49	36.26	8.95	.012
253	7.62	10.96	49.72	33.06	35.84	8.50	.018
280	7.12	10.46	49.24	32.54	35.32	7.95	.017
308	6.77	10.10	48.88	32.14	34.91	7.51	—.013
Dec. =	— 24° 3′	— 23° 51′	— 12° 48′	— 23° 48′	— 24° 22′	— 30° 25′	
Mag. =	5	5	5.4	5	5.4	3.4	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	μ^1 Sagittarii.	δ Sagittarii.	λ Sagittarii.	Bradley 2333.	φ Sagittarii.	29 Sagittarii.	
	$18^{h}\ 5^{m}$	$18^{h}\ 12^{m}$	$18^{h}\ 19^{m}$	$18^{h}\ 30^{m}$	$18^{h}\ 37^{m}$	$18^{h}\ 41^{m}$	
d	s	s	s	s	s	s	
34	38.22	17.63	35.11	14.65	10.01	36.12	+.025
62	39.04	18.49	35.93	15.44	10.81	36.87	.030
89	39.88	19.39	36.79	16.29	11.68	37.69	.031
116	40.69	20.27	37.64	17.13	12.55	38.52	.030
144	41.39	21.04	38.39	17.90	13.34	39.29	.024
171	41.87	21.57	38.92	18.44	13.93	39.85	.015
199	42.06	21.79	39.16	18.70	14.21	40.13	+.003
226	41.92	21.65	39.04	18.62	14.14	40.08	—.009
254	41.51	21.22	38.64	18.23	13.75	39.72	.017
281	40.99	20.66	38.10	17.71	13.22	39.21	.018
308	40.59	20.22	37.66	17.27	12.76	38.77	—.013
Dec. =	— 21° 5′	— 29° 53′	—25° 30′	— 23° 37′	— 27° 8′	— 20° 29′	
Mag. =	4	3.4	3	6	4.3	6	
	ν^1 Sagittarii.	σ Sagittarii.	ζ Sagittarii.	τ Sagittarii.	χ^1 Sagittarii.	h^2 Sagittarii.	
	$18^{h}\ 45^{m}$	$18^{h}\ 46^{m}$	$18^{h}\ 53^{m}$	$18^{h}\ 58^{m}$	$19^{h}\ 17^{m}$	$19^{h}\ 28^{m}$	
	s	s	s	s	s	s	
63	58.53	51.08	58.70	27.95	0.57	26.56	+.028
90	59.37	51.95	59.59	28.82	1.40	27.38	.031
117	60.22	52.82	60.49	29.70	2.27	28.25	.031
145	61.00	53.63	61.33	30.53	3.11	29.10	.027
172	61.57	54.21	61.96	31.15	3.75	29.78	.018
199	61.86	54.51	62.28	31.48	4.12	30.18	+.006
227	61.80	54.45	62.24	31.45	4.15	30.23	—.006
254	61.44	54.08	61.87	31.10	3.84	29.94	.016
282	60.91	53.54	61.31	30.56	3.32	29.44	.019
309	60.47	53.08	60.83	30.08	2.85	28.95	.013
336	60.26	52.87	60.59	29.84	2.58	28.67	—.005
Dec. =	— 22° 54′	— 26° 28′	— 30° 4′	— 27° 52′	— 24° 46′	— 25° 11′	
Mag. =	5	2.3	3.4	4.3	6	5.4	
	e^2 Sagittarii.	*f* Sagittarii.	*b* Sagittarii.	A Sagittarii.	*c* Sagittarii.	Piazzi xix.366.	
	$19^{h}\ 34^{m}$	$19^{h}\ 38^{m}$	$19^{h}\ 48^{m}$	$19^{h}\ 50^{m}$	$19^{h}\ 54^{m}$	$19^{h}\ 55^{m}$	
	s	s	s	s	s	s	
63	45.10	26 31	36.60	40.48	18.16	43.07	+.024
91	45.89	27.11	37.43	41.30	18.98	43.92	.030
118	46.71	27.94	38.31	42.17	19.86	44.84	.032
145	47.49	28.75	39.17	43.03	20.73	45.75	.029
172	48.14	29.42	39.90	43.75	21.47	46.52	.021
200	48.54	29.84	40.37	44.23	21.96	47.04	+.010
228	48 60	29.90	40.46	44.33	22.07	47.16	—.003
255	48.32	29.63	40.20	44.07	21.82	46.89	.014
283	47.86	29.16	39.71	43.59	21.33	46.39	.018
310	47.40	28.68	39.20	43 09	20.82	45.85	.015
337	47.12	28.40	38.88	42.77	20.49	45.49	—.006
Dec. =	— 16° 26′	— 20° 5′	— 27° 32′	— 26° 34′	— 28° 5′	— 32° 26′	
Mag. =	5	5	5	5	5	5	
	α^2 Capricorni.	π Capricorni.	ϱ Capricorni.	υ Capricorni.	ψ Capricorni.	ω Capricorni.	
	$20^{h}\ 10^{m}$	$20^{h}\ 19^{m}$	$20^{h}\ 21^{m}$	$20^{h}\ 32^{m}$	$20^{h}\ 38^{m}$	$20^{h}\ 43^{m}$	
	s	s	s	s	s	s	
91	31.62	33 28	7.27	19.46	3.55	43.09	+.027
119	32.45	34.12	8.10	20.29	4.41	43.96	.031
146	33.26	34.96	8.94	21.14	5.30	44.86	.030
173	33.94	35.68	9.67	21.88	6.08	45.66	.024
201	34.41	36.19	10.18	22.41	6.66	46.25	.013
228	34.54	36.35	10.34	22.61	6.88	46.49	+.001
256	34.34	36.16	10.16	22.45	6.73	46.36	—.011
283	33.93	35.75	9.74	22.05	6.32	45.95	.016
310	33.47	35.29	9.28	21.59	5.83	45.46	.015
338	33.15	34.94	8.94	21.23	5.44	45.05	—.009
365	33.09	34.86	8.85	21.13	5.31	44.91	+.001
Dec. =	— 12° 58′	— 18° 39′	— 18° 16′	— 18° 37′	— 25° 45′	— 27° 26′	
Mag. =	3.4	5	5	6.5	4.5	4.5	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	ν Aquarii.	ι Capricorni.	ζ Capricorni.	ε Capricorni.	γ Capricorni.	δ Capricorni.	
	$21^h\ 2^m$	$21^h\ 14^m$	$21^h\ 18^m$	$21^h\ 29^m$	$21^h\ 32^m$	$21^h\ 39^m$	
d	s	s	s	s	s	s	
92	11.94	41.33	54.79	28.61	34.13	32.65	+.024
119	12.70	42.09	55.57	29.36	34.87	33.38	.030
147	13.55	42.97	56.47	30.25	35.74	34.25	.031
174	14.31	43.75	57.29	31.06	36.55	35.06	.027
201	14.87	44.36	57.92	31.70	37.19	35.71	.017
229	15.13	44.66	58.24	32.05	37.54	36.08	+.005
257	15.05	44.60	58.19	32.03	37.53	36.08	—.007
284	14.70	44.28	57.86	31.73	37.24	35.81	.014
311	14.27	43.85	57.41	31.30	36.83	35.41	.015
339	13.91	43.46	57.01	30.90	36.44	35.02	.011
366	13.75	43.28	56.81	30.69	36.22	34.79	—.004
Dec. =	— 11° 55′	— 17° 25′	— 23° 0′	— 20° 4′	— 17° 16′	— 16° 44′	
Mag. =	4.5	4.5	4	5.4	4.3	3	
	μ Capricorni.	ι Aquarii.	θ Aquarii.	ρ Aquarii.	53^2 Aquarii.	σ Aquarii.	
	$21^h\ 45^m$	$21^h\ 59^m$	$22^h\ 9^m$	$22^h\ 13^m$	$22^h\ 19^m$	$22^h\ 23^m$	
	s	s	s	s	s	s	
10	52.67	5.36	39.39	2.52	11.31	26.96	—.004
93	53.54	6.13	40.05	3.16	11.92	27.52	+.021
120	54.25	6.82	40.72	3.81	12.58	28.16	.028
147	55.10	7.64	41.52	4.61	13.40	28.96	.030
175	55.92	8.49	42.36	5.45	14.27	29.81	.028
202	56.57	9.16	43.03	6.13	14.98	30.51	.020
230	56.93	9.56	43.45	6.56	15.44	30.97	+.009
257	56.95	9.61	43.52	6.64	15.55	31.08	—.003
285	56.69	9.37	43.32	6.44	15.35	30.91	.011
312	56.29	8.99	42.96	6.09	15.00	30.57	.014
339	55.92	8.62	42.61	5.73	14.62	30.20	—.012
Dec. =	— 14° 11′	— 14° 32′	— 8° 28′	— 8° 30′	— 17° 26′	— 11° 22′	
Mag. =	5	4	4.5	5.6	6	5.4	
	κ Aquarii.	τ^2 Aquarii.	δ Aquarii.	φ Aquarii.	ψ^1 Aquarii.	ψ^3 Aquarii.	
	$22^h\ 30^m$	$22^h\ 42^m$	$22^h\ 47^m$	$23^h\ 7^m$	$23^h\ 8^m$	$23^h\ 11^m$	
	s	s	s	s	s	s	
11	42.96	23.43	25.90	17.07	46.12	53.42	—.006
94	43.46	23.85	26.28	17.29	46.33	53.61	+.018
121	44.10	24.48	26.91	17.86	46.90	54.17	.026
148	44.89	25.28	27.72	18.62	47.66	54.92	.030
176	45.73	26.14	28.57	19.47	48.52	55.78	.029
203	46.42	26.87	29.32	20.22	49.28	56.54	.023
230	46.86	27.35	29.82	20.74	49.81	57.08	.013
258	46.99	27.52	30.00	20.97	50.05	57.33	+.002
286	46.83	27.38	29.87	20.91	49.98	57.27	—.008
313	46.51	27.06	29.55	20.64	49.72	57.01	.012
340	46.16	26.70	29.18	20.31	49.39	56.68	—.013
Dec. =	— 4° 56′	— 14° 19′	— 16° 33′	— 6° 47′	— 9° 50′	—10° 21′	
Mag. =	5	4	3	4.5	5.4	5	
	κ Piscium.	λ Piscium.	20 Piscium.	27 Piscium.	30 Piscium.	33 Piscium.	
	$23^h\ 19^m$	$23^h\ 35^m$	$23^h\ 40^m$	$23^h\ 51^m$	$23^h\ 54^m$	$23^h\ 58^m$	
	s	s	s	s	s	s	
12	58.12	7.14	57.45	43.10	59.72	23.08	—.009
39	57.96	6.95	57.25	42.88	59.49	22.85	—.004
122	58.80	7.68	57.93	43.47	60.06	23.39	+.022
149	59.56	8.42	58.66	44.18	60.77	24.09	.029
176	60.38	9.23	59.47	45.00	61.58	24.91	.030
204	61.16	10.03	60.28	45.81	62.41	25.73	.025
231	61.70	10.60	60.86	46.41	63.01	26.35	.016
259	61.95	10.89	61.17	46.75	63.36	26.70	+.006
286	61.91	10.89	61.19	46.80	63.42	26.77	—.004
314	61.67	10.69	60.99	46.62	63.25	26.61	.009
341	61.36	10.38	60.69	46.33	62.96	26.32	—.013
Dec. =	+ 0° 31′	+ 1° 2′	— 3° 31′	— 4° 19′	— 6° 46′	— 6° 28′	
Mag. =	5.4	5	6	5.6	5	5	

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	JANUARY.					FEBRUARY.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	′ ″	′ ″	″	h m	m	′ ″	′ ″	″	h m	m
1.0	15 4.6	55 13.1	+1.54	L. 5 34.6	1.83	15 40.1	57 23.7	+2.26	L. 6 42.0	2.24
1.5	15 9.9	55 32.7	1.73	U. 17 56.9	1.87	15 47.7	57 51.4	2.34	U. 19 9.4	2.31
2.0	15 15.9	55 54.6	1.91	L. 6 19.6	1.94	15 55.4	58 19.9	2.38	L. 7 37.6	2.37
2.5	15 22.4	56 18.6	2.08	U. 18 43.3	2.02	16 3.2	58 48.6	2.38	U. 20 6.6	2.44
3.0	15 29.5	56 44.5	2.22	L. 7 7.7	2.08	16 11.0	59 17.0	2.32	L. 8 36.2	2.49
3.5	15 36.9	57 12.0	2.34	U. 19 33.1	2.15	16 18.4	59 44.3	2.21	U. 21 6.3	2.52
4.0	15 44.7	57 40.6	2.41	L. 7 59.5	2.24	16 25.4	60 9.9	2.03	L. 9 36.7	2.53
4.5	15 52.7	58 9.8	2.44	U. 20 26.9	2.32	16 31.7	60 33.0	1.79	U. 22 7.1	2.53
5.0	16 0.7	58 39.2	2.42	L. 8 55.3	2.40	16 37.1	60 52.8	1.49	L. 10 37.4	2.51
5.5	16 8.5	59 8.0	2.35	U. 21 24.6	2.47	16 41.4	61 8.8	1.14	U. 23 7.4	2.48
6.0	16 16.0	59 35.6	2.21	L. 9 54.6	2.53	16 44.5	61 20.3	0.75	L. 11 37.0	2.44
6.5	16 23.0	60 1.1	2.01	U. 22 25.3	2.57	16 46.3	61 26.9	+0.34		
7.0	16 29.2	60 23.9	1.76	L. 10 56.3	2.59	16 46.7	61 28.4	—0.10	U. 0 6.1	2.40
7.5	16 34.5	60 43.3	1.45	U. 23 27.4	2.58	16 45.7	61 24.6	0.52	L. 12 34.6	2.36
8.0	16 38.7	60 58.7	1.10	L. 11 58.3	2.56	16 43.3	61 15.8	0.93	U. 1 2.6	2.31
8.5	16 41.7	61 9.6	0.71			16 39.6	61 2.3	1.31	L. 13 30.1	2.27
9.0	16 43.3	61 15.7	+0.30	U. 0 28.9	2.52	16 34.8	60 44.5	1.64	U. 1 57.1	2.24
9.5	16 43.6	61 16.9	—0.10	L. 12 58.9	2.47	16 28.9	60 22.9	1.92	L. 14 23.8	2.21
10.0	16 42.6	61 13.2	0.50	U. 1 28.2	2.41	16 22.3	59 58.4	2.14	U. 2 50.2	2.19
10.5	16 40.3	61 4.8	0.88	L. 13 56.8	2.35	16 15.0	59 31.6	2.30	L. 15 16.3	2.17
11.0	16 36.8	60 52.1	1.22	U. 2 24.7	2.29	16 7.2	59 3.3	2.39	U. 3 42.3	2.16
11.5	16 32.3	60 35.5	1.52	L. 14 51.9	2.24	15 59.3	58 34.2	2.43	L. 16 8.2	2.15
12.0	16 26.9	60 15.7	1.75	U. 3 18.4	2.19	15 51.4	58 5.0	2.42	U. 4 34.0	2.15
12.5	16 20.9	59 53.3	1.94	L. 15 44.5	2.15	15 43.5	57 36.2	2.36	L. 16 59.8	2.15
13.0	16 14.3	59 29.1	2.07	U. 4 10.1	2.12	15 35.9	57 8.4	2.26	U. 5 25.5	2.14
13.5	16 7.3	59 3.6	2.15	L. 16 35.4	2.10	15 28.7	56 41.9	2.14	L. 17 51.2	2.14
14.0	16 0.2	58 37.6	2.17	U. 5 0.5	2.09	15 22.0	56 17.0	1.99	U. 6 16.8	2.13
14.5	15 53.2	58 11.5	2.16	L. 17 25.5	2.08	15 15.7	55 54.0	1.83	L. 18 42.3	2.12
15.0	15 46.2	57 45.9	2.11	U. 5 50.4	2.08	15 10.0	55 33.0	1.66	U. 7 7.6	2.10
15.5	15 39.4	57 20.9	2.03	L. 18 15.3	2.08	15 4.9	55 14.2	1.48	L. 19 32.7	2.08
16.0	15 32.9	56 57.1	1.93	U. 6 40.3	2.08	15 0.3	54 57.5	1.30	U. 7 57.6	2.06
16.5	15 26.7	56 34.6	1.81	L. 19 5.3	2.09	14 56.4	54 43.0	1.12	L. 20 22.1	2.03
17.0	15 21.0	56 13.6	1.68	U. 7 30.4	2.10	14 53.0	54 30.6	0.94	U. 8 46.2	2.00
17.5	15 15.7	55 54.2	1.55	L. 19 55.6	2.10	14 50.2	54 20.3	0.77	L. 21 10.0	1.96
18.0	15 10.9	55 36.3	1.42	U. 8 20.8	2.10	14 48.0	54 12.1	0.61	U. 9 33.4	1.93
18.5	15 6.4	55 20.0	1.29	L. 20 46.0	2.09	14 46.2	54 5.7	0.45	L. 21 56.4	1.90
19.0	15 2.4	55 5.3	1.16	U. 9 11.1	2.08	14 45.0	54 1.2	0.31	U. 10 18.9	1.87
19.5	14 58.9	54 52.2	1.03	L. 21 36.0	2.07	14 44.2	53 58.3	0.17	L. 22 41.1	1.84
20.0	14 55.7	54 40.6	0.90	U. 10 0.7	2.04	14 43.9	53 57.1	—0.04	U. 11 3.0	1.81
20.5	14 53.0	54 30.5	0.78	L. 22 25.1	2.02	14 44.0	53 57.3	+0.08	L. 23 24.6	1.79
21.0	14 50.6	54 21.8	0.67	U. 10 49.1	1.99	14 44.4	53 59.0	0.19	U. 11 45.9	1.77
21.5	14 48.6	54 14.4	0.56	L. 23 12.8	1.95	14 45.2	54 2.0	0.30		
22.0	14 46.9	54 8.3	0.45	U. 11 36.0	1.92	14 46.3	54 6.2	0.40	L. 0 7.1	1.76
22.5	14 45.6	54 3.5	0.35	L. 23 58.8	1.88	14 47.8	54 11.6	0.50	U. 12 28.2	1.76
23.0	14 44.6	53 59.9	0.24			14 49.6	54 18.2	0.60	L. 0 49.2	1.76
23.5	14 44.0	53 57.6	0.14	U. 12 21.1	1.85	14 51.7	54 26.0	0.70	U. 13 10.3	1.77
24.0	14 43.7	53 56.6	—0.03	L. 0 43.1	1.82	14 54.2	54 35.0	0.80	L. 1 31.6	1.78
24.5	14 43.8	53 56.8	+0.08	U. 13 4.7	1.79	14 57.0	54 45.2	0.90	U. 13 53.1	1.80
25.0	14 44.2	53 58.4	0.19	L. 1 26.1	1.77	15 0.1	54 56.6	1.01	L. 2 14.9	1.83
25.5	14 45.1	54 1.4	0.32	U. 13 47.2	1.75	15 3.5	55 9.3	1.11	U. 14 37.1	1.87
26.0	14 46.3	54 6.0	0.45	L. 2 8.2	1.74	15 7.3	55 23.3	1.22	L. 2 59.8	1.91
26.5	14 48.0	54 12.2	0.58	U. 14 20.1	1.74	15 11.5	55 38.7	1.34	U. 15 23.0	1.96
27.0	14 50.1	54 20.1	0.73	L. 2 50.0	1.75	15 16.1	55 55.4	1.45	L. 3 46.8	2.02
27.5	14 52.8	54 29.7	0.89	U. 15 11.0	1.76	15 21.0	56 13.5	1.56	U. 16 11.4	2.08
28.0	14 55.9	54 41.3	1.04	L. 3 32.3	1.78	15 26.3	56 32.9	1.67	L. 4 36.6	2.14
28.5	14 59.6	54 54.8	1.21	U. 15 53.8	1.82	15 31.9	56 53.5	1.77	U. 17 2.6	2.20
29.0	15 3.8	55 10.3	1.37	L. 4 15.8	1.85	15 37.9	57 15.4	1.86	L. 5 29.4	2.26
29.5	15 8.6	55 27.7	1.54	U. 16 38.4	1.90	15 44.1	57 38.3	1.94	U. 17 56.8	2.31
30.0	15 13.9	55 47.2	1.71	L. 5 1.5	1.96	15 50.5	58 2.0	1.99	L. 6 21.8	2.35
30.5	15 19.7	56 8.7	1.87	U. 17 25.4	2.02	15 57.1	58 26.2	2.02	U. 18 53.3	2.39
31.0	15 26.1	56 32.0	2.02	L. 5 50.0	2.09	16 3.8	58 50.5	2.02	L. 7 22.2	2.42
31.5	15 32.9	56 57.1	+2.15	U. 18 15.6	2.17	16 10.3	59 14.5	+1.97	U. 19 51.3	2.43

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	MARCH.					APRIL.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	′ ″	′ ″	″	h m	m	′ ″	′ ″	″	h m	m
1.0	15 50.5	58 2.0	+1.99	L. 6 24.8	2.35	16 17.5	59 41.3	+1.12	L. 8 4.1	2.29
1.5	15 57.1	58 26.2	2.02	U. 18 53.3	2.39	16 21.0	59 53.8	0.96	U. 20 31.4	2.27
2.0	16 3.8	58 50.5	2.02	L. 7 22.2	2.42	16 23.8	60 4.2	0.76	L. 8 58.5	2.25
2.5	16 10.3	59 14.5	1.97	U. 19 51.3	2.43	16 25.9	60 12.1	0.54	U. 21 25.4	2.23
3.0	16 16.6	59 37.7	1.87	L. 8 20.5	2.43	16 27.3	60 17.2	0.29	L. 9 52.0	2.22
3.5	16 22.5	59 59.3	1.72	U. 20 49.7	2.42	16 27.8	60 19.0	+0.01	U. 22 18.7	2.22
4.0	16 27.8	60 18.9	1.52	L. 9 18.7	2.41	16 27.4	60 17.5	—0.27	L. 10 45.3	2.22
4.5	16 32.4	60 35.8	1.27	U. 21 47.5	2.39	16 26.1	60 12.4	0.57	U. 23 12.0	2.22
5.0	16 36.1	60 49.4	0.97	L. 10 15.9	2.36	16 23.8	60 3.8	0.86	L. 11 38.6	2.23
5.5	16 38.8	60 59.2	0.64	U. 22 44.1	2.33	16 20.5	59 51.7	1.14		
6.0	16 40.3	61 4.7	+0.27	L. 11 11.9	2.31	16 16.3	59 36.3	1.40	U. 0 5.4	2.24
6.5	16 40.6	61 5.7	—0.11	U. 23 39.4	2.28	16 11.2	59 18.1	1.62	L. 12 32.4	2.25
7.0	16 39.6	61 2.1	0.50			16 5.6	58 57.5	1.80	U. 0 59.4	2.25
7.5	16 37.3	60 53.8	0.88	L. 12 6.7	2.26	15 59.5	58 34.9	1.94	L. 13 26.5	2.26
8.0	16 33.8	60 41.0	1.23	U. 0 33.8	2.25	15 53.0	58 10.9	2.04	U. 1 53.7	2.27
8.5	16 29.3	60 24.2	1.55	L. 13 0.7	2.24	15 46.2	57 45.9	2.09	L. 14 20.9	2.26
9.0	16 23.8	60 3.8	1.82	U. 1 27.6	2.23	15 39.3	57 20.6	2.10	U. 2 47.9	2.24
9.5	16 17.4	59 40.4	2.05	L. 13 54.3	2.23	15 32.4	56 55.5	2.06	L. 15 14.7	2.22
10.0	16 10.4	59 14.7	2.21	U. 2 21.1	2.23	15 25.8	56 31.0	1.99	U. 3 41.2	2.19
10.5	16 2.9	58 47.3	2.32	L. 14 47.8	2.22	15 19.4	56 7.7	1.88	L 16 7.3	2.15
11.0	15 55.2	58 19.0	2.38	U. 3 14.5	2.22	15 13.4	55 45.9	1.75	U. 4 32.9	2.12
11.5	15 47.4	57 50.3	2.38	L. 15 41.1	2.21	15 8.0	55 25.8	1.59	L. 16 58.1	2.07
12.0	15 39.7	57 22.0	2.33	U. 4 7.6	2.20	15 3.1	55 7.7	1.41	U. 5 22.7	2.02
12.5	15 32.2	56 54.5	2.24	L. 16 34.0	2.19	14 58.8	54 52.0	1.21	L. 17 46.7	1.97
13.0	15 25.0	56 28.3	2.12	U. 5 0.2	2.17	14 55.2	54 38.7	1.01	U. 6 10.1	1.93
13.5	15 18.3	56 3.7	1.97	L. 17 26.1	2.14	14 52.2	54 27.8	0.79	L. 18 33.0	1.89
14.0	15 12.1	55 41.0	1.80	U. 5 51.6	2.11	14 49.9	54 19.6	0.58	U. 6 55.5	1.85
14.5	15 6.6	55 20.4	1.61	L. 18 16.7	2.08	14 48.3	54 13.9	0.37	L. 19 17.5	1.82
15.0	15 1.6	55 2.2	1.41	U. 6 41.4	2.04	14 47.5	54 10.7	—0.15	U. 7 39.1	1.79
15.5	14 57.3	54 46.4	1.21	L. 19 5.7	2.00	14 47.4	54 10.1	+0.05	L. 20 0.5	1.78
16.0	14 53.7	54 33.1	1.01	U. 7 29.5	1.96	14 47.9	54 12.0	0.25	U. 8 21.8	1.77
16.5	14 50.7	54 22.2	0.80	L. 19 52.8	1.92	14 49.1	54 16.2	0.44	L. 20 42.9	1.76
17.0	14 48.4	54 13.8	0.60	U. 8 15.7	1.89	14 50.8	54 22.6	0.61	U. 9 4.1	1.77
17.5	14 46.8	54 7.8	0.41	L. 20 38.1	1.86	14 53.0	54 30.9	0.76	L. 21 25.4	1.78
18.0	14 45.8	54 4.0	0.22	U. 9 0.2	1.83	14 55.8	54 41.0	0.90	U. 9 46.8	1.79
18.5	14 45.4	54 2.4	—0.05	L. 21 21.9	1.80	14 59.1	54 52.6	1.03	L. 22 8.4	1.82
19.0	14 45.5	54 2.9	+0.12	U. 9 43.4	1.78	15 2.6	55 5.6	1.13	U. 10 30.4	1.85
19.5	14 46.1	54 5.3	0.28	L. 22 4.7	1.77	15 6.4	55 19.7	1.21	L. 22 52.9	1.90
20.0	14 47.3	54 9.5	0.41	U. 10 25.9	1.77	15 10.4	55 34.6	1.27	U. 11 16.0	1.95
20.5	14 48.9	54 15.3	0.54	L. 22 47.1	1.77	15 14.6	55 50.1	1.31	L. 23 39.6	2.00
21.0	14 50.8	54 22.4	0.65	U. 11 8.3	1.77	15 19.0	56 6.1	1.33		
21.5	14 53.0	54 30.8	0.75	L. 23 29.6	1.79	15 23.4	56 22.2	1.34	U. 12 3.9	2.05
22.0	14 55.6	54 40.3	0.84	U. 11 51.2	1.81	15 27.8	56 38.2	1.33	L. 0 28.9	2.11
22.5	14 58.5	54 50.8	0.92			15 32.1	56 54.1	1.30	U. 12 54.6	2.17
23.0	15 1.6	55 2.2	0.98	L. 0 13.0	1.83	15 36.3	57 9.5	1.27	L. 1 20.9	2.22
23.5	15 4.9	55 14.4	1.04	U. 12 35.2	1.87	15 40.3	57 24.5	1.22	U. 13 47.8	2.27
24.0	15 8.4	55 27.2	1.10	L. 0 57.9	1.91	15 44.3	57 38.9	1.17	L. 2 15.3	2.31
24.5	15 12.1	55 40.7	1.15	U. 13 21.0	1.95	15 48.0	57 52.6	1.11	U. 14 43.2	2.34
25.0	15 15.9	55 54.7	1.19	L. 1 44.7	2.00	15 51.5	58 5.6	1.05	L. 3 11.5	2.36
25.5	15 19.9	56 9.3	1.23	U. 14 9.1	2.05	15 54.9	58 17.9	0.99	U. 15 39.8	2.36
26.0	15 24.0	56 24.3	1.27	L. 2 34.1	2.11	15 58.0	58 29.4	0.92	L. 4 8.1	2.35
26.5	15 28.2	56 39.9	1.31	U. 14 59.7	2.16	16 0.9	58 40.1	0.85	U. 16 36.3	2.34
27.0	15 32.5	56 55.8	1.35	L. 3 25.9	2.21	16 3.6	58 49.9	0.78	L. 5 4.2	2.31
27.5	15 37.0	57 12.2	1.38	U. 15 52.7	2.26	16 6.0	58 58.8	0.71	U. 17 31.8	2.29
28.0	15 41.6	57 28.9	1.41	L. 4 20.1	2.29	16 8.2	59 6.8	0.62	L. 5 59.1	2.26
28.5	15 46.2	57 46.0	1.43	U. 16 47.8	2.32	16 10.1	59 13.9	0.54	U. 18 26.0	2.23
29.0	15 50.9	58 3.3	1.44	L. 5 15.8	2.34	16 11.7	59 19.8	0.44	L. 6 52.6	2.20
29.5	15 55.7	58 20.7	1.45	U. 17 44.0	2.35	16 13.0	59 24.4	0.33	U. 19 18.9	2.17
30.0	16 0.4	58 38.0	1.43	L. 6 12.3	2.35	16 13.9	59 27.7	0.21	L. 7 44.8	2.15
30.5	16 5.0	58 55.0	1.39	U. 18 40.5	2.34	16 14.3	59 29.4	+0.07	U. 20 10.6	2.14
31.0	16 9.5	59 11.5	1.33	L. 7 8.5	2.33	16 14.3	59 29.4	—0.08	L. 8 36.3	2.14
31.5	16 13.7	59 27.0	+1.24	U. 19 36.4	2.31	16 13.8	59 27.5	—0.24	U. 21 2.1	2.15

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	MAY.					JUNE.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d	′ ″	′ ″	″	h m	m	′ ″	′ ″	″	h m	m
1.0	16 14.3	59 29.4	—0.08	L. 8 36.3	2.14	15 48.0	57 52.6	—1.13	L. 9 57.9	2.20
1.5	16 13.8	59 27.5	0.24	U. 21 2.1	2.15	15 44.2	57 38.6	1.20	U. 22 24.5	2.22
2.0	16 12.8	59 23.6	0.42	L. 9 27.9	2.16	15 40.2	57 23.8	1.26	L. 10 51.2	2.23
2.5	16 11.1	59 17.5	0.59	U. 21 53.9	2.18	15 36.0	57 8.3	1.31	U. 23 18.0	2.23
3.0	16 8.8	59 9.3	0.77	L. 10 20.1	2.21	15 31.6	56 52.3	1.34	L. 11 44.8	2.22
3.5	16 6.0	58 58.9	0.96	U. 22 46.5	2.23	15 27.1	56 36.0	1.36		
4.0	16 2.6	58 46.3	1.13	L. 11 13.2	2.23	15 22.7	56 19.6	1.37	U. 0 11.4	2.20
4.5	15 58.6	58 31.7	1.29	U. 23 40.1	2.25	15 18.1	56 3.1	1.36	L. 12 37.7	2.17
5.0	15 54.2	58 15.3	1.43			15 13.7	55 46.9	1.33	U. 1 3.6	2.14
5.5	15 49.3	57 57.4	1.54	L. 12 7.2	2.26	15 9.5	55 31.2	1.28	L. 13 29.1	2.10
6.0	15 44.1	57 38.3	1.63	U. 0 34.3	2.26	15 5.4	55 16.2	1.20	U. 1 54.0	2.05
6.5	15 38.6	57 18.2	1.69	L. 13 1.5	2.26	15 1.6	55 2.3	1.11	L. 14 18.4	2.01
7.0	15 33.0	56 57.6	1.72	U. 1 28.5	2.24	14 58.2	54 49.5	1.00	U. 2 42.2	1.96
7.5	15 27.4	56 36.9	1.72	L. 13 55.3	2.22	14 55.1	54 38.3	0.86	L. 15 5.4	1.91
8.0	15 21.8	56 16.4	1.68	U. 2 21.7	2.18	14 52.4	54 28.8	0.71	U. 3 28.0	1.86
8.5	15 16.4	55 56.6	1.61	L. 14 47.7	2.14	14 50.2	54 21.2	0.55	L. 15 50.1	1.82
9.0	15 11.3	55 37.7	1.52	U. 3 13.1	2.10	14 48.8	54 15.7	0.36	U. 4 11.8	1.79
9.5	15 6.5	55 20.2	1.39	L. 15 38.0	2.05	14 48.0	54 12.4	—0.17	L. 16 33.2	1.77
10.0	15 2.1	55 4.3	1.24	U. 4 2.3	2.00	14 47.7	54 11.5	+0.03	U. 4 54.3	1.75
10.5	14 58.3	54 50.2	1.08	L. 16 26.0	1.95	14 48.1	54 13.1	0.24	L. 17 15.2	1.75
11.0	14 55.1	54 38.2	0.90	U. 4 49.1	1.90	14 49.3	54 17.3	0.45	U. 5 36.2	1.74
11.5	14 52.4	54 28.5	0.70	L. 17 11.6	1.86	14 51.2	54 24.1	0.67	L. 17 57.1	1.75
12.0	14 50.4	54 21.3	0.49	U. 5 33.7	1.82	14 53.8	54 33.4	0.88	U. 6 18.2	1.76
12.5	14 49.2	54 16.6	0.28	L. 17 55.4	1.79	14 57.0	54 45.1	1.08	L. 18 39.5	1.79
13.0	14 48.6	54 14.5	—0.07	U. 6 16.8	1.77	15 0.8	54 59.3	1.28	U. 7 1.3	1.83
13.5	14 48.7	54 14.9	+0.14	L. 18 37.9	1.76	15 5.3	55 15.9	1.46	L. 19 23.5	1.87
14.0	14 49.5	54 17.9	0.36	U. 6 59.0	1.75	15 10.4	55 34.5	1.63	U. 7 46.3	1.93
14.5	14 51.0	54 23.5	0.57	L. 19 20.0	1.75	15 15.9	55 55.0	1.77	L. 20 9.8	1.99
15.0	14 53.2	54 31.6	0.77	U. 7 41.1	1.77	15 21.9	56 17.1	1.89	U. 8 34.1	2.06
15.5	14 56.1	54 42.1	0.96	L. 20 2.4	1.79	15 28.3	56 40.4	1.98	L. 20 59.3	2.13
16.0	14 59.5	54 54.6	1.13	U. 8 24.0	1.82	15 34.9	57 4.7	2.03	U. 9 25.3	2.21
16.5	15 3.4	55 9.2	1.28	L. 20 46.0	1.85	15 41.6	57 29.2	2.04	L. 21 52.3	2.28
17.0	15 7.9	55 25.5	1.41	U. 9 8.5	1.90	15 48.3	57 53.7	2.01	U. 10 20.0	2.34
17.5	15 12.8	55 43.2	1.52	L. 21 31.6	1.95	15 54.8	58 17.6	1.94	L. 22 48.5	2.40
18.0	15 18.0	56 2.1	1.61	U. 9 55.4	2.02	16 1.0	58 40.4	1.83	U. 11 17.6	2.44
18.5	15 23.3	56 21.8	1.66	L. 22 20.0	2.08	16 6.7	59 1.5	1.67	L. 23 47.1	2.47
19.0	15 28.8	56 42.0	1.68	U. 10 45.3	2.14	16 11.8	59 20.4	1.47		
19.5	15 34.2	57 2.2	1.67	L. 23 11.4	2.21	16 16.4	59 36.9	1.25	U. 12 16.9	2.48
20.0	15 39.6	57 22.1	1.63	U. 11 38.3	2.27	16 20.1	59 50.6	1.00	L. 0 46.7	2.47
20.5	15 44.9	57 41.4	1.56			16 23.0	60 1.0	0.73	U. 13 16.3	2.45
21.0	15 49.9	57 59.7	1.47	L. 0 5.9	2.32	16 24.9	60 8.1	0.46	L. 1 45.5	2.42
21.5	15 54.6	58 16.6	1.35	U. 12 34.1	2.37	16 25.9	60 12.0	+0.19	U. 14 14.3	2.37
22.0	15 58.8	58 32.1	1.22	L. 1 2.8	2.40	16 26.1	60 12.7	—0.08	L. 2 42.5	2.32
22.5	16 2.5	58 45.8	1.06	U. 13 31.7	2.42	16 25.4	60 10.2	0.33	U. 15 10.1	2.28
23.0	16 5.7	58 57.6	0.90	L. 2 0.8	2.42	16 24.0	60 4.7	0.57	L. 3 37.2	2.24
23.5	16 8.3	59 7.4	0.73	U. 14 29.8	2.41	16 21.8	59 56.5	0.77	U. 16 3.8	2.20
24.0	16 10.4	59 15.1	0.56	L. 2 58.6	2.38	16 18.9	59 46.1	0.95	L. 4 30.0	2.17
24.5	16 12.0	59 20.8	0.39	U. 15 27.0	2.35	16 15.5	59 33.8	1.08	U. 16 55.8	2.14
25.0	16 13.0	59 24.6	0.23	L. 3 55.0	2.31	16 11.8	59 20.1	1.19	L. 5 21.3	2.12
25.5	16 13.5	59 26.5	+0.08	U. 16 22.5	2.27	16 7.7	59 5.2	1.27	U. 17 46.7	2.11
26.0	16 13.6	59 26.6	—0.05	L. 4 49.4	2.22	16 3.4	58 49.6	1.33	L. 6 12.0	2.11
26.5	16 13.2	59 25.2	0.18	U. 17 15.9	2.19	15 59.0	58 33.3	1.37	U. 18 37.3	2.11
27.0	16 12.4	59 22.3	0.29	L. 5 41.9	2.15	15 54.6	58 16.7	1.39	L. 7 2.7	2.12
27.5	16 11.3	59 18.1	0.40	U. 18 7.6	2.13	15 50.0	58 0.0	1.39	U. 19 28.3	2.14
28.0	16 9.8	59 12.6	0.50	L. 6 33.0	2.12	15 45.4	57 43.2	1.39	L. 7 54.1	2.15
28.5	16 8.0	59 6.0	0.59	U. 18 58.4	2.11	15 40.9	57 26.5	1.38	U. 20 20.0	2.17
29.0	16 5.9	58 58.4	0.68	L. 7 23.6	2.10	15 36.5	57 10.3	1.36	L. 8 46.2	2.18
29.5	16 3.6	58 49.7	0.76	U. 19 48.9	2.11	15 32.1	56 54.1	1.33	U. 21 12.4	2.19
30.0	16 0.9	58 40.1	0.84	L. 8 14.2	2.12	15 27.8	56 38.3	1.30	L. 9 38.7	2.19
30.5	15 58.0	58 29.6	0.91	U. 20 39.8	2.14	15 23.5	56 22.9	1.27	U. 22 4.9	2.18
31.0	15 54.9	58 18.2	0.99	L. 9 5.6	2.16	15 19.4	56 7.8	1.24	L. 10 30.9	2.17
31.5	15 51.6	58 5.8	—1.06	U. 21 31.6	2.18	15 15.5	55 53.1	—1.20	U. 22 56.8	2.14

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	JULY.					AUGUST.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d	′ ″	′ ″	″	h m	m	′ ″	′ ″	″	h m	m
1.0	15 19.4	56 7.8	—1.24	L. 10 30.9	2.17	14 51.3	54 24.3	—0.68	L. 11 42.8	1.89
1.5	15 15.5	55 53.1	1.20	U. 22 56.8	2.14	14 49.2	54 16.6	0.59		
2.0	15 11.6	55 38.9	1.16	L. 11 22.4	2.11	14 47.4	54 10.2	0.49	U. 0 5.2	1.85
2.5	15 7.9	55 25.3	1.11	U. 23 47.5	2.08	14 46.0	54 5.0	0.38	L. 12 27.2	1.82
3.0	15 4.3	55 12.3	1.05			14 45.0	54 1.1	0.27	U. 0 48.8	1.79
3.5	15 1.0	55 0.1	0.98	L. 12 12.2	2.04	14 44.3	53 58.5	0.16	L. 13 10.1	1.76
4.0	14 57.9	54 48.7	0.91	U. 0 36.4	1.99	14 43.9	53 57.3	—0.03	U. 1 31.2	1.75
4.5	14 55.1	54 38.3	0.83	L. 13 0.0	1.95	14 44.0	53 57.7	+0.10	L. 13 52.1	1.74
5.0	14 52.5	54 28.9	0.73	U. 1 23.1	1.90	14 44.6	53 59.8	0.25	U. 2 12.9	1.73
5.5	14 50.3	54 20.8	0.62	L. 13 45.7	1.86	14 45.7	54 3.6	0.40	L. 14 33.7	1.74
6.0	14 48.5	54 14.1	0.49	U. 2 7.8	1.82	14 47.2	54 9.4	0.56	U. 2 54.6	1.75
6.5	14 47.1	54 9.0	0.36	L. 14 29.5	1.79	14 49.3	54 17.1	0.73	L. 15 15.7	1.77
7.0	14 46.2	54 5.5	0.21	U. 2 50.9	1.77	14 52.0	54 27.0	0.91	U. 3 37.1	1.80
7.5	14 45.8	54 4.0	—0.04	L. 15 12.0	1.75	14 55.3	54 38.9	1.09	L. 15 58.9	1.83
8.0	14 45.9	54 4.6	+0.13	U. 3 32.9	1.74	14 59.1	54 53.1	1.27	U. 4 21.1	1.87
8.5	14 46.7	54 7.3	0.32	L. 15 53.7	1.73	15 3.6	55 9.4	1.46	L. 16 43.9	1.92
9.0	14 48.0	54 12.3	0.52	U. 4 14.6	1.74	15 8.6	55 28.0	1.64	U. 5 7.3	1.98
9.5	14 50.0	54 19.7	0.72	L. 16 35.5	1.75	15 14.3	55 48.7	1.81	L. 17 31.4	2.04
10.0	14 52.7	54 29.5	0.92	U. 4 56.7	1.78	15 20.5	56 11.5	1.97	U. 5 56.3	2.10
10.5	14 56.0	54 41.7	1.13	L. 17 18.2	1.81	15 27.2	56 36.1	2.12	L. 18 21.9	2.17
11.0	15 0.0	54 56.5	1.33	U. 5 40.1	1.85	15 34.3	57 2.3	2.25	U. 6 48.4	2.24
11.5	15 4.7	55 13.6	1.52	L. 18 2.5	1.90	15 41.8	57 29.9	2.34	L. 19 15.6	2.30
12.0	15 10.0	55 33.0	1.71	U. 6 25.6	1.95	15 49.6	57 58.4	2.40	U. 7 43.5	2.35
12.5	15 15.9	55 54.6	1.88	L. 18 49.4	2.02	15 57.5	58 27.3	2.42	L. 20 12.0	2.40
13.0	15 22.3	56 18.1	2.03	U. 7 14.1	2.09	16 5.3	58 56.2	2.38	U. 8 41.0	2.43
13.5	15 29.2	56 43.4	2.16	L. 19 39.5	2.16	16 13.0	59 24.4	2.29	L. 21 10.4	2.45
14.0	15 36.4	57 9.9	2.26	U. 8 5.9	2.23	16 20.3	59 51.1	2.15	U. 9 39.9	2.46
14.5	15 43.9	57 37.4	2.32	L. 20 33.1	2.30	16 27.0	60 15.7	1.94	L. 22 9.4	2.46
15.0	15 51.5	58 5.3	2.33	U. 9 1.2	2.37	16 32.9	60 37.4	1.67	U. 10 38.8	2.44
15.5	15 59.0	58 33.1	2.29	L. 21 29.9	2.42	16 37.8	60 55.5	1.35	L. 23 7.9	2.42
16.0	16 6.4	59 0.1	2.20	U. 9 59.3	2.46	16 41.6	61 9.6	0.99	U. 11 36.8	2.39
16.5	16 13.4	59 25.7	2.06	L. 22 29.0	2.49	16 44.2	61 19.1	0.59		
17.0	16 19.8	59 49.3	1.86	U. 10 58.9	2.50	16 45.5	61 23.7	+0.17	L. 0 5.4	2.36
17.5	16 25.5	60 10.2	1.61	L. 23 28.9	2.49	16 45.4	61 23.3	—0.24	U. 12 33.5	2.33
18.0	16 30.3	60 27.8	1.32	U. 11 58.7	2.47	16 43.9	61 17.9	0.65	L. 1 1.4	2.31
18.5	16 34.1	60 41.8	0.99			16 41.1	61 7.7	1.04	U. 13 29.0	2.29
19.0	16 36.7	60 51.6	0.64	L. 0 28.1	2.44	16 37.1	60 53.1	1.38	L. 1 56.3	2.27
19.5	16 38.2	60 57.0	+0.27	U. 12 57.2	2.40	16 32.1	60 34.7	1.68	U. 14 23.4	2.26
20.0	16 38.5	60 58.1	—0.10	L. 1 25.7	2.36	16 26.2	60 13.0	1.92	L. 2 50.4	2.25
20.5	16 37.6	60 54.8	0.45	U. 13 53.7	2.31	16 19.6	59 48.7	2.10	U. 15 17.3	2.24
21.0	16 35.6	60 47.3	0.78	L. 2 21.2	2.27	16 12.5	59 22.7	2.23	L. 3 44.2	2.24
21.5	16 32.5	60 36.1	1.08	U. 14 48.3	2.24	16 5.1	58 55.5	2.30	U. 16 11.0	2.23
22.0	16 28.5	60 21.5	1.34	L. 3 15.0	2.21	15 57.6	58 27.7	2.32	L. 4 37.8	2.23
22.5	16 23.8	60 4.1	1.55	U. 15 41.4	2.19	15 50.1	58 0.1	2.29	U. 17 4.5	2.22
23.0	16 18.5	59 44.5	1.71	L. 4 7.5	2.17	15 42.7	57 33.0	2.22	L. 5 31.1	2.21
23.5	16 12.7	59 23.2	1.83	U. 16 33.5	2.16	15 35.5	57 6.9	2.13	U. 17 57.6	2.20
24.0	16 6.6	59 0.8	1.90	L. 4 59.5	2.16	15 28.8	56 42.1	2.01	L. 6 23.9	2.18
24.5	16 0.3	58 37.8	1.93	U. 17 25.4	2.16	15 22.5	56 18.8	1.87	U. 18 49.9	2.16
25.0	15 54.0	58 14.6	1.93	L. 5 51.3	2.16	15 16.6	55 57.1	1.73	L. 7 15.6	2.13
25.5	15 47.7	57 51.7	1.90	U. 18 17.3	2.17	15 11.2	55 37.3	1.58	U. 19 41.0	2.10
26.0	15 41.6	57 29.2	1.84	L. 6 43.3	2.17	15 6.3	55 19.3	1.42	L. 8 5.9	2.06
26.5	15 35.7	57 7.6	1.77	U. 19 9.4	2.17	15 1.9	55 3.2	1.27	U. 20 30.3	2.02
27.0	15 30.1	56 46.9	1.68	L. 7 35.5	2.17	14 58.0	54 48.9	1.11	L. 8 54.3	1.98
27.5	15 24.7	56 27.2	1.59	U. 20 1.6	2.17	14 54.6	54 36.4	0.96	U. 21 17.8	1.94
28.0	15 19.7	56 8.6	1.49	L. 8 27.5	2.15	14 51.7	54 25.8	0.82	L. 9 40.9	1.90
28.5	15 15.0	55 51.3	1.39	U. 20 53.2	2.13	14 49.3	54 16.8	0.68	U. 22 3.4	1.86
29.0	15 10.6	55 35.2	1.29	L. 9 18.7	2.11	14 47.3	54 9.5	0.54	L. 10 25.6	1.83
29.5	15 6.5	55 20.3	1.19	U. 21 43.8	2.08	14 45.7	54 3.9	0.41	U. 22 47.4	1.80
30.0	15 2.8	55 6.7	1.08	L. 10 8.5	2.04	14 44.6	53 59.7	0.29	L. 11 8.9	1.78
30.5	14 59.4	54 54.3	0.98	U. 22 32.8	2.00	14 43.8	53 56.9	0.17	U. 23 30.1	1.76
31.0	14 56.4	54 43.1	0.88	L. 10 56.6	1.96	14 43.5	53 55.6	—0.06	L. 11 51.1	1.75
31.5	14 53.7	54 33.1	—0.78	U. 23 19.9	1.92	14 43.5	53 55.5	+0.05		

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	SEPTEMBER.					OCTOBER.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d	′ ″	′ ″	″	h m	m	′ ″	′ ″	″	h m	m
1.0	14 43.8	53 56.8	+0.16	U. 0 12.1	1.74	14 53.9	54 33.9	+0.76	U. 0 18.2	1.83
1.5	14 44.5	53 59.4	0.27	L. 12 33.0	1.74	14 56.6	54 43.6	0.85	L. 12 40.4	1.87
2.0	14 45.6	54 3.3	0.38	U. 0 53.9	1.75	14 59.5	54 54.3	0.93	U. 1 3.1	1.91
2.5	14 47.0	54 8.7	0.50	L. 13 14.9	1.76	15 2.6	55 6.1	1.02	L. 13 26.2	1.95
3.0	14 48.9	54 15.4	0.63	U. 1 36.2	1.78	15 6.1	55 18.8	1.11	U. 1 49.9	2.00
3.5	14 51.1	54 23.7	0.76	L. 13 57.7	1.81	15 9.9	55 32.6	1.20	L. 14 14.1	2.04
4.0	14 53.8	54 33.6	0.89	U. 2 19.6	1.84	15 14.0	55 47.5	1.28	U. 2 38.9	2.09
4.5	14 56.9	54 45.0	1.03	L. 14 41.9	1.88	15 18.3	56 3.4	1.36	L. 15 4.3	2.13
5.0	15 0.5	54 58.2	1.17	U. 3 4.7	1.92	15 22.9	56 20.3	1.45	U. 3 30.2	2.17
5.5	15 4.6	55 13.1	1.31	L. 15 28.0	1.97	15 27.7	56 38.1	1.53	L. 15 56.5	2.21
6.0	15 9.1	55 29.8	1.46	U. 3 52.0	2.02	15 32.9	56 57.0	1.61	U. 4 23.2	2.24
6.5	15 14.1	55 48.2	1.61	L. 16 16.6	2.08	15 38.3	57 16.9	1.69	L. 16 50.2	2.26
7.0	15 19.6	56 8.3	1.75	U. 4 41.8	2.13	15 43.9	57 37.5	1.75	U. 5 17.5	2.28
7.5	15 25.5	56 30.1	1.88	L. 17 7.7	2.18	15 49.7	57 58.8	1.79	L. 17 44.9	2.29
8.0	15 31.9	56 53.5	2.00	U. 5 34.2	2.23	15 55.5	58 20.4	1.81	U. 6 12.4	2.29
8.5	15 38.6	57 18.2	2.11	L. 18 1.3	2.28	16 1.4	58 42.2	1.80	L. 18 39.8	2.28
9.0	15 45.6	57 44.0	2.19	U. 6 28.8	2.31	16 7.3	59 3.7	1.76	U. 7 7.2	2.28
9.5	15 52.9	58 10.6	2.24	L. 18 56.8	2.34	16 13.0	59 24.5	1.69	L. 19 34.5	2.27
10.0	16 0.2	58 37.5	2.25	U. 7 25.0	2.36	16 18.3	59 44.3	1.57	U. 8 1.7	2.26
10.5	16 7.5	59 4.4	2.22	L. 19 53.5	2.37	16 23.2	60 2.3	1.41	L. 20 28.8	2.26
11.0	16 14.7	59 30.6	2.14	U. 8 22.0	2.38	16 27.5	60 18.1	1.20	U. 8 55.9	2.26
11.5	16 21.5	59 55.5	2.00	L. 20 50.5	2.38	16 31.1	60 31.1	0.95	L. 21 23.0	2.26
12.0	16 27.7	60 18.4	1.81	U. 9 19.0	2.37	16 33.8	60 41.0	0.66	U. 9 50.2	2.26
12.5	16 33.2	60 38.7	1.56	L. 21 47.3	2.35	16 35.5	60 47.1	0.34	L. 22 17.4	2.27
13.0	16 37.8	60 55.7	1.26	U. 10 15.5	2.34	16 36.0	60 49.2	+0.00	U. 10 44.8	2.29
13.5	16 41.4	61 8.7	0.91	L. 22 43.5	2.33	16 35.4	60 47.2	—0.35	L. 23 12.3	2.30
14.0	16 43.8	61 17.3	0.53	U. 11 11.4	2.32	16 33.7	60 40.9	0.70	U. 11 40.1	2.32
14.5	16 44.8	61 21.2	+0.12	L. 23 39.2	2.31	16 30.9	60 30.4	1.04		
15.0	16 44.5	61 20.1	—0.30			16 27.0	60 16.0	1.35	L. 0 8.1	2.34
15.5	16 42.8	61 14.0	0.71	U. 12 6.9	2.31	16 22.1	59 58.0	1.64	U. 12 36.3	2.35
16.0	16 39.9	61 3.1	1.10	L. 0 34.6	2.31	16 16.3	59 36.7	1.88	L. 1 4.7	2.36
16.5	16 35.7	60 47.8	1.45	U. 13 2.3	2.31	16 9.8	59 13.0	2.06	U. 13 33.1	2.36
17.0	16 30.4	60 28.4	1.76	L. 1 30.0	2.31	16 2.8	58 47.3	2.19	L. 2 1.4	2.35
17.5	16 24.2	60 5.7	2.02	U. 13 57.8	2.31	15 55.5	58 20.4	2.27	U. 14 29.4	2.33
18.0	16 17.3	59 40.2	2.21	L. 2 25.5	2.31	15 48.0	57 52.8	2.30	L. 2 57.2	2.30
18.5	16 9.8	59 12.8	2.35	U. 14 53.3	2.31	15 40.5	57 25.2	2.28	U. 15 24.6	2.26
19.0	16 2.0	58 44.1	2.42	L. 3 20.9	2.30	15 33.2	56 58.2	2.21	L. 3 51.5	2.21
19.5	15 54.1	58 14.8	2.44	U. 15 48.4	2.28	15 26.1	56 32.2	2.11	U. 16 17.7	2.16
20.0	15 46.1	57 45.7	2.41	L. 4 15.7	2.26	15 19.4	56 7.6	1.97	L. 4 43.3	2.10
20.5	15 38.4	57 17.2	2.33	U. 16 42.7	2.24	15 13.2	55 44.9	1.81	U. 17 8.3	2.05
21.0	15 30.9	56 49.9	2.22	L. 5 9.3	2.20	15 7.6	55 24.2	1.63	L. 5 32.5	1.99
21.5	15 23.9	56 24.0	2.08	U. 17 35.5	2.16	15 2.5	55 5.7	1.44	U. 17 56.2	1.94
22.0	15 17.3	56 0.0	1.92	L. 6 1.1	2.12	14 58.2	54 49.7	1.23	L. 6 19.2	1.90
22.5	15 11.3	55 38.0	1.75	U. 18 26.2	2.07	14 54.5	54 36.2	1.02	U. 18 41.7	1.85
23.0	15 5.9	55 18.1	1.56	L. 6 50.8	2.02	14 51.5	54 25.2	0.81	L. 7 3.7	1.82
23.5	15 1.1	55 0.5	1.37	U. 19 14.7	1.98	14 49.2	54 16.7	0.60	U. 19 25.4	1.79
24.0	14 57.0	54 45.2	1.18	L. 7 38.2	1.93	14 47.6	54 10.7	0.40	L. 7 46.6	1.76
24.5	14 53.4	54 32.1	0.99	U. 20 1.1	1.89	14 46.6	54 7.2	0.20	U. 20 7.7	1.75
25.0	14 50.5	54 21.3	0.81	L. 8 23.5	1.85	14 46.2	54 6.0	—0.01	L. 8 28.6	1.74
25.5	14 48.1	54 12.8	0.63	U. 20 45.5	1.82	14 46.5	54 7.0	+0.17	U. 20 49.6	1.75
26.0	14 46.4	54 6.3	0.45	L. 9 7.2	1.79	14 47.4	54 10.0	0.34	L. 9 10.6	1.76
26.5	14 45.2	54 1.9	0.29	U. 21 28.5	1.77	14 48.7	54 15.0	0.49	U. 21 31.8	1.77
27.0	14 44.5	53 59.4	—0.13	L. 9 49.7	1.76	14 50.6	54 21.7	0.62	L. 9 53.2	1.79
27.5	14 44.3	53 58.7	+0.01	U. 22 10.7	1.75	14 52.8	54 29.9	0.74	U. 22 14.9	1.82
28.0	14 44.6	53 59.6	0.14	L. 10 31.7	1.75	14 55.3	54 39.4	0.84	L. 10 36.9	1.86
28.5	14 45.2	54 2.1	0.27	U. 22 52.6	1.75	14 58.3	54 50.2	0.93	U. 22 59.5	1.90
29.0	14 46.3	54 6.0	0.38	L. 11 13.7	1.76	15 1.5	55 2.0	1.01	L. 11 22.5	1.94
29.5	14 47.7	54 11.2	0.49	U. 23 35.0	1.78	15 4.9	55 14.5	1.07	U. 23 46.2	1.99
30.0	14 49.5	54 17.7	0.58	L. 11 56.5	1.80	15 8.5	55 27.6	1.12		
30.5	14 51.5	54 25.2	0.68			15 12.2	55 41.3	1.16	L. 12 10.4	2.04
31.0	14 53.9	54 33.9	0.76	U. 0 18.2	1.83	15 16.1	55 55.4	1.18	U. 0 35.2	2.09
31.5	14 56.6	54 43.6	+0.85	L. 12 40.4	1.87	15 20.0	56 9.7	+1.20	L. 13 0.6	2.14

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	NOVEMBER.					DECEMBER.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d	′ ″	′ ″	″	h m	m	′ ″	′ ″	″	h m	m
1.0	15 23.9	56 24.2	+1.22	U. 1 26.5	2.18	15 53.3	58 12.0	+1.03	U. 2 3.1	2.32
1.5	15 27.9	56 38.9	1.22	L. 13 52.9	2.21	15 56.5	58 23.6	0.92	L. 14 30.8	2.31
2.0	15 31.9	56 53.6	1.23	U. 2 19.6	2.24	15 59.3	58 34.0	0.81	U. 2 58.4	2.28
2.5	15 35.9	57 8.4	1.23	L. 14 46.7	2.26	16 1.7	58 43.0	0.70	L. 15 25.6	2.25
3.0	15 40.0	57 23.2	1.23	U. 3 13.8	2.27	16 3.8	58 50.8	0.60	U. 3 52.5	2.23
3.5	15 44.0	57 38.0	1.23	L. 15 41.1	2.27	16 5.6	58 57.4	0.50	L. 16 19.0	2.20
4.0	15 48.0	57 52.7	1.22	U. 4 8.2	2.26	16 7.1	59 2.8	0.40	U. 4 45.2	2.17
4.5	15 52.0	58 7.4	1.21	L. 16 35.3	2.25	16 8.3	59 7.0	0.31	L. 17 11.2	2.15
5.0	15 56.0	58 21.8	1.19	U. 5 2.2	2.24	16 9.1	59 10.2	0.22	U. 5 36.9	2.14
5.5	15 59.8	58 36.0	1.17	L. 17 29.0	2.22	16 9.7	59 12.3	0.13	L. 18 2.5	2.13
6.0	16 3.6	58 49.8	1.13	U. 5 55.5	2.20	16 10.0	59 13.4	+0.04	U. 6 28.0	2.13
6.5	16 7.2	59 3.0	1.07	L. 18 21.8	2.19	16 10.0	59 13.3	—0.06	L. 18 53.6	2.14
7.0	16 10.5	59 15.4	0.99	U. 6 48.0	2.18	16 9.6	59 12.0	0.16	U. 7 19.3	2.15
7.5	16 13.6	59 26.8	0.89	L. 19 14.0	2.17	16 8.9	59 9.5	0.26	L. 19 45.3	2.17
8.0	16 16.3	59 36.8	0.76	U. 7 40.1	2.17	16 7.9	59 5.8	0.37	U. 8 11.5	2.20
8.5	16 18.5	59 45.1	0.61	L. 20 6.2	2.18	16 6.5	59 0.6	0.49	L. 20 38.0	2.23
9.0	16 20.3	59 51.5	0.43	U. 8 32.5	2.20	16 4.7	58 53.9	0.62	U. 9 4.9	2.25
9.5	16 21.5	59 55.5	0.23	L. 20 59.0	2.22	16 2.4	58 45.6	0.76	L. 21 32.1	2.28
10.0	16 21.9	59 57.0	+0.01	U. 9 25.7	2.24	15 59.7	58 35.7	0.89	U. 9 59.6	2.30
10.5	16 21.6	59 55.7	—0.23	L. 21 52.8	2.27	15 56.6	58 24.2	1.02	L. 22 27.4	2.32
11.0	16 20.4	59 51.4	0.48	U. 10 20.2	2.30	15 53.0	58 11.1	1.15	U. 10 55.2	2.32
11.5	16 18.3	59 44.1	0.74	L. 22 48.0	2.32	15 49.1	57 56.6	1.27	L. 23 23.0	2.31
12.0	16 15.5	59 33.7	0.99	U. 11 16.0	2.34	15 44.8	57 40.8	1.37	U. 11 50.6	2.29
12.5	16 12.0	59 20.4	1.22	L. 23 44.3	2.36	15 40.2	57 23.8	1.45		
13.0	16 7.6	59 4.4	1.43			15 35.3	57 6.0	1.51	L. 0 17.9	2.26
13.5	16 2.5	58 46.0	1.61	U 12 12.7	2.36	15 30.3	56 47.6	1.55	U. 12 44.8	2.22
14.0	15 56.9	58 25.7	1.76	L. 0 41.0	2.35	15 25.2	56 28.9	1.56	L. 1 11.1	2.17
14.5	15 51.0	58 3.8	1.87	U. 13 9.1	2.33	15 20.1	56 10.2	1.54	U. 13 36.8	2.12
15.0	15 44.8	57 40.8	1.94	L. 1 36.9	2.30	15 15.2	55 52.0	1.50	L. 2 1.9	2.06
15.5	15 38.3	57 17.3	1.97	U. 14 4.2	2.26	15 10.4	55 34.4	1.43	U. 14 26.2	2.00
16.0	15 31.9	56 53.6	1.96	L. 2 31.1	2.22	15 5.9	55 17.9	1.33	L. 2 49.9	1.95
16.5	15 25.6	56 30.3	1.91	U. 14 57.3	2.15	15 1.7	55 2.7	1.20	U. 15 12.9	1.90
17.0	15 19.5	56 7.9	1.82	L. 3 22.8	2.09	14 58.0	54 49.1	1.05	L. 3 35.4	1.85
17.5	15 13.7	55 46.7	1.70	U. 15 47.6	2.04	14 54.9	54 37.5	0.89	U. 15 57.4	1.81
18.0	15 8.4	55 27.1	1.56	L. 4 11.7	1.98	14 52.3	54 27.9	0.70	L. 4 19.0	1.78
18.5	15 3.5	55 9.3	1.40	U 16 35.0	1.92	14 50.3	54 20.6	0.51	U. 16 40.2	1.76
19.0	14 59.3	54 53.7	1.21	L. 4 57.8	1.88	14 49.0	54 15.7	0.30	L. 5 1.3	1.75
19.5	14 55.7	54 40.4	1.00	U. 17 20.1	1.84	14 48.3	54 13.4	—0.09	U. 17 22.2	1.74
20.0	14 52.7	54 29.6	0.79	L. 5 41.8	1.80	14 48.4	54 13.7	+0.13	L. 5 43.1	1.75
20.5	14 50.5	54 21.4	0.57	U. 18 3.2	1.77	14 49.2	54 16.6	0.37	U. 18 4.1	1.76
21.0	14 49.0	54 15.9	0.36	L. 6 24.4	1.76	14 50.7	54 22.2	0.59	L. 6 25.3	1.78
21.5	14 48.2	54 12.9	—0.14	U. 18 45.4	1.75	14 52.9	54 30.4	0.80	U. 18 46.8	1.81
22.0	14 48.1	54 12.6	+0.08	L. 7 6.3	1.74	14 55.9	54 41.2	1.00	L. 7 8.7	1.85
22.5	14 48.7	54 14.8	0.29	U. 19 27.2	1.75	14 59.5	54 54.3	1.19	U. 19 31.1	1.89
23.0	14 50.0	54 19.5	0.49	L. 7 48.3	1.77	15 3.7	55 9.7	1.37	L. 7 54.0	1.94
23.5	14 51.9	54 26.6	0.67	U. 20 9.7	1.79	15 8.4	55 27.2	1.53	U. 20 17.6	2.00
24.0	14 54.4	54 35.8	0.85	L. 8 31.4	1.82	15 13.6	55 46.4	1.66	L. 8 42.0	2.06
24.5	14 57.5	54 47.0	1.01	U. 20 53.5	1.86	15 19.2	56 7.0	1.77	U. 21 7.1	2.12
25.0	15 1.0	54 59.9	1.14	L. 9 16.1	1.91	15 25.2	56 28.7	1.84	L. 9 32.9	2.18
25.5	15 4.9	55 14.4	1.26	U. 21 39.3	1.96	15 31.3	56 51.1	1.88	U. 21 59.5	2.24
26.0	15 9.2	55 30.1	1.35	L. 10 3.1	2.01	15 37.4	57 13.8	1.88	L. 10 26.7	2.29
26.5	15 13.7	55 46.7	1.42	U. 22 27.6	2.07	15 43.5	57 36.2	1.85	U. 22 54.5	2.33
27.0	15 18.4	56 4.0	1.46	L. 10 52.8	2.13	15 49.5	57 58.0	1.77	L. 11 22.7	2.36
27.5	15 23.2	56 21.6	1.47	U. 23 18.7	2.18	15 55.1	58 18.6	1.66	U. 23 51.2	2.38
28.0	15 28.0	56 39.2	1.46	L. 11 45.2	2.23	16 0.3	58 37.8	1.52	L. 12 19.8	2.38
28.5	15 32.7	56 56.6	1.43			16 5.0	58 54.9	1.34		
29.0	15 37.4	57 13.5	1.38	U. 0 12.2	2.27	16 9.0	59 9.8	1.13	U. 0 48.3	2.37
29.5	15 41.8	57 29.7	1.31	L. 12 39.6	2.30	16 12.4	59 22.2	0.92	L. 13 16.7	2.35
30.0	15 45.9	57 44.9	1.23	U. 1 7.3	2.31	16 15.1	59 32.0	0.70	U. 1 44.8	2.33
30.5	15 49.8	57 59.0	1.13	L. 13 35.2	2.32	16 17.0	59 38.9	0.47	L. 14 12.5	2.29
31.0	15 53.3	58 12.0	1.03	U. 2 3.1	2.32	16 18.1	59 43.2	0.24	U. 2 39.8	2.26
31.5	15 56.5	58 23.6	+0.92	L. 14 30.8	2.31	16 18.5	59 44.7	+0.02	L. 15 6.7	2.23

WASHINGTON MEAN TIME.

PHASES.

Month.	Last Quarter.	New Moon.	First Quarter.	Full Moon.	Last Quarter.	New Moon.
	d h m	d h m	d h m	d h m	d h m	
January	1 14 31.0	8 14 37.4	15 5 57.8	23 4 54.1	31 7 9.3	
February		7 1 1.6	13 20 15.9	21 23 52.7	29 20 3.6	
March		7 10 51.0	14 12 58.8	22 17 16.0	30 5 11.9	
April		5 20 40.8	13 7 0.4	21 8 10.5	28 11 26.3	
May		5 7 5.8	13 1 12.0	20 20 15.8	27 16 12.9	
June		3 18 31.9	11 18 39.7	19 5 45.9	25 21 7.0	
July		3 7 15.4	11 10 42.5	18 13 27.6	25 3 37.9	d h m
August		1 21 25.2	10 0 48.9	16 20 28.3	23 12 56.1	31 12 59.6
September			8 12 41.9	15 4 0.9	22 1 45.8	30 5 34.9
October			7 22 28.8	14 13 7.2	21 18 19.1	29 22 19.8
November			6 6 44.6	13 0 25.0	20 14 8.4	28 14 8.8
December			5 14 25.5	12 14 4.1	20 11 54.4	28 4 13.2

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Month.	Perigee.	Apogee.	Perigee.	GREATEST LIBRATION.		
	d h	d h		d h m	d h m	d h m
January	9 8.9	24 4.0		3 12 4 S.E.	15 15 48 S.W.	31 19 36 S.E.
February	6 21.3	20 3.9			12 21 43 S.W.	28 22 9 S.E.
March	6 8.6	18 15.2	d h		12 4 51 S.W.	27 7 27 S.E.
April	3 12.5	15 8.9	30 17.9		9 7 14 S.W.	22 14 31 S.E.
May		13 4.1	25 19.1		6 23 25 S.W.	19 10 0 S.E.
June		9 22.3	21 20.6	2 20 32 S.W.	16 0 7 S.E.	29 4 15 S.W.
July		7 15.0	19 20.8		14 0 2 S.E.	26 10 12 S.W.
August		4 2.9	17 5.0		11 4 38 S.E.	23 9 9 S.W.
August		31 6.2				
September	14 15.3	27 10.9			8 9 37 S.E.	20 14 3 S.W.
October	13 0.3	25 0.6		6 8 6 N.E.	18 19 18 N.W.	
November	11 0.5	21 20.2		2 6 52 S.E.	15 19 11 N.W.	28 11 35 S.E.
December	6 5.1	19 16.7	31 13.6		13 6 2 N.W.	25 17 30 S.E.

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables.

I = the inclination of the moon's equator 1° 28′.8,

☊ = mean longitude of moon's ascending node (see page 250),

C = the angle which the mean meridian of the moon's disc makes with the circle of declination reckoned from north to west on the apparent disc.

λ, β, α', and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

$$\Delta\lambda = 0'.57 \sin 2\,(\lambda - \text{☊}),$$

$$a = \cos\,(\text{☊} - \lambda) \sin I,$$

$$\tan \beta = \sin\,(\text{☊} - \lambda) \tan I.$$

In these formulas, the tables p. 8 of the Appendix may be substituted.

The libration in latitude $= b = B - \beta$.

The libration in longitude $= l = \lambda + \Delta\lambda + ab - \text{☾}$.

$$\sin C = \sin i \, \frac{\cos\,(\text{☾} + l - \text{☊} + \Delta)}{\cos \delta'} = - \sin i \, \frac{\cos\,(\alpha' - \text{☊}')}{\cos b}.$$

WASHINGTON MEAN TIME.

MOON'S EQUATOR.

Sidereal Date 0h.	i Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	☊′ Ascending Node on Earth's Equator.	☾ Moon's Mean Longitude.
0^{d}	24° 19′.7	52° 44′.9	2° 57′.5	179° 42′.2
10	24 20.3	52 14.3	2 56.3	311 6.5
20	24 20.9	51 43.8	2 55.0	82 30.7
30	24 21.6	51 13.2	2 53.8	213 55.0
40	24 22.2	50 42.7	2 52.5	345 19.2
50	24 22.8	50 12.1	2 51.3	116 43.5
60	24 23.4	49 41.6	2 50.0	248 7.7
70	24 24.0	49 11.1	2 48.7	19 32.0
80	24 24.6	48 40.6	2 47.4	150 56.2
90	24 25.2	48 10.1	2 46.1	282 20.5
100	24 25.8	47 39.6	2 44.8	53 44.7
110	24 26.4	47 9.2	2 43.4	185 9.0
120	24 27.0	46 38.8	2 42.1	316 33.2
130	24 27.5	46 8.3	2 40.7	87 57.5
140	24 28.1	45 37.9	2 39.4	219 21.7
150	24 28.7	45 7.5	2 38.0	350 46.0
160	24 29.3	44 37.1	2 36.6	122 10.2
170	24 29.9	44 6.7	2 35.2	253 34.5
180	24 30.4	43 36.4	2 33.7	24 58.7
190	24 31.0	43 6.0	2 32.3	156 23.0
200	24 31.6	42 35.6	2 30.9	287 47.2
210	24 32.2	42 5.3	2 29.4	59 11.5
220	24 32.7	41 34.9	2 27.9	190 35.8
230	24 33.3	41 4.6	2 26.5	322 0.0
240	24 33.8	40 34.2	2 25.0	93 24.3
250	24 34.3	40 3.9	2 23.5	224 48.5
260	24 34.8	39 33.6	2 22.0	356 12.8
270	24 35.3	39 3.3	2 20.5	127 37.0
280	24 35.9	38 32.9	2 18.9	259 1.3
290	24 36.4	38 2.6	2 17.4	30 25.5
300	24 36.9	37 32.3	2 15.9	161 49.8
310	24 37.4	37 2.1	2 14.3	293 14.0
320	24 37.9	36 31.8	2 12.7	64 38.3
330	24 38.3	36 1.6	2 11.2	196 2.6
340	24 38.8	35 31.3	2 9.6	327 26.8
350	24 39.3	35 1.1	2 8.0	98 51.1
360	24 39.7	34 30.9	2 6.4	230 15.3
370	24 40.0	34 0.8	2 4.8	1 39.5

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.										
Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of *t*.		Log Coefficient of *t*².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
Jan. 1	20 0 5.87	0 25.86	−22 28 20.4	27 6.4	+9.41017	+9.9784	−4.37	+5.25	1 1 17.8	0
2	20 6 11.06	6 31.00	22 4 53.8	3 33.7	9.39769	0.0005	4.44	5.21	2 1 19.9	1
3	20 12 4.91	12 24.65	21 40 19.2	38 53.5	9.38276	0.0194	4.50	5.16	3 1 21.8	2
4	20 17 45.70	18 5.03	21 14 44.5	13 13.8	9.36491	0.0354	4.56	5.09	4 1 23.6	3
5	20 23 11.49	23 30.22	20 48 18.1	46 43.0	9.34352	0.0481	4.62	5.00	5 1 25.0	4
6	20 28 20.12	28 38.01	20 21 10.8	19 32.3	9.31772	0.0574	4.67	4.84	6 1 26.2	5
7	20 33 9.20	33 26.00	19 53 35.2	51 54.5	9.28641	0.0630	4.73	+4.53	7 1 27.1	6
8	20 37 36.11	37 51.56	19 25 45.7	24 4.0	9.24798	0.0647	4.78	−3.72	8 1 27.6	7
9	20 41 37.97	41 51.82	18 57 58.6	56 17.7	9.20023	0.0617	4.83	4.70	9 1 27.6	8
10	20 45 11.74	45 23.72	18 30 32.4	28 53.8	9.13977	0.0536	4.88	5.00	10 1 27.2	9
11	20 48 14.22	48 24.09	18 3 47.3	2 12.9	9.06109	0.0396	4.92	5.18	11 1 26.3	10
12	20 50 42.15	50 49.71	17 38 5.3	36 36.9	8.95415	0.0185	4.96	5.32	12 1 24.8	11
13	20 52 32.30	52 37.41	17 13 49.7	12 29.2	8.79689	9.9891	4.99	5.42	13 1 22.6	12
14	20 53 41.66	53 44.25	16 51 24.1	50 13.2	8.52342	9.9497	5.02	5.51	14 1 19.8	13
15	20 54 7.62	54 7.75	16 31 11.9	30 11.9	+7.38695	9.8976	5.04	5.57	15 1 16.3	14
16	20 53 48.16	53 45.97	16 13 35.5	12 47.1	−8.47156	9.8291	5.05	5.63	16 1 12.0	15
17	20 52 42.14	52 37.94	15 58 54.3	58 17.9	8.79298	9.7380	5.05	5.66	17 1 6.9	16
18	20 50 49.60	50 43.81	15 47 24.1	46 59.2	8.97352	9.6129	5.04	5.69	18 1 1.1	17
19	20 48 11.91	48 5.09	15 39 15.7	39 1.2	9.09551	9.4278	5.01	5.70	19 0 54.5	18
20	20 44 52.02	44 44.79	15 34 33.4	34 27.6	9.18323	+9.0955	4.96	5.69	20 0 47.3	19
21	20 40 54.56	40 47.60	15 33 15.1	33 15.8	9.24697	−8.1700	4.88	5.67	21 0 39.4	20
22	20 36 25.74	36 19.66	15 35 11.7	35 16.2	9.29201	9.1621	4.76	5.64	22 0 31.0	21
23	20 31 33.11	31 28.46	15 40 7.5	40 13.3	9.32123	9.4201	4.57	5.58	23 0 22.2	22
24	20 26 25.26	26 22.40	15 47 41.8	47 46.6	9.33641	9.5622	−4.17	5.51	24 0 13.2	23
25	20 21 11.26	21 10.37	15 57 30.1	57 31.9	9.33858	9.6523	+3.85	5.42	25 0 4.1	24
26	20 16 0.16	16 1.22	16 9 6.6	9 4.0	9.32841	9.7118	4.44	5.29	25 23 55.0	25
27	20 11 0.44	11 3.26	16 22 4.7	21 56.9	9.30621	9.7504	4.66	5.14	26 23 46.1	26
28	20 6 19.55	6 23.75	16 35 59.6	35 46.3	9.27188	9.7739	4.78	4.91	27 23 37.6	27
29	20 2 3.66	2 8.79	16 50 28.7	50 10.0	9.22487	9.7858	4.86	−4.54	28 23 29.4	28
30	19 58 17.52	58 23.10	17 5 12.4	4 48.9	9.16401	9.7886	4.90	+3.76	29 23 21.7	29
31	19 55 4.39	55 9.93	17 19 53.9	19 26.3	9.08693	9.7839	4.93	4.59	30 23 14.6	30
Feb. 1	19 52 26.21	52 31.26	17 34 19.4	33 48.6	8.98882	9.7728	4.94	4.82	0 23 8.0	31
2	19 50 23.79	50 27.97	17 48 17.7	47 44.6	8.86088	9.7562	4.93	4.94	1 23 2.0	32
3	19 48 56.99	49 0.01	18 1 39.7	1 5.3	8.68200	9.7345	4.92	5.02	2 22 56.6	33
4	19 48 4.96	48 6.58	18 14 18.0	13 43.1	8.38658	9.7075	4.91	5.08	3 22 51.8	34
5	19 47 46.35	47 46.43	18 26 6.6	25 32.2	−7.23081	9.6755	4.88	5.12	4 22 47.5	35
6	19 47 59.45	47 57.91	18 37 0.7	36 27.5	+8.29358	9.6377	4.86	5.15	5 22 43.8	36
7	19 48 42.31	48 39.12	18 46 56.4	46 25.1	8.59812	9.5938	4.83	5.17	6 22 40.6	37
8	19 49 52.94	49 48.11	18 55 50.3	55 21.5	8.76514	9.5424	4.79	5.19	7 22 37.8	38
9	19 51 29.32	51 22.90	19 3 39.5	3 13.8	8.87739	9.4812	4.76	5.21	8 22 35.4	39
10	19 53 29.44	53 21.50	19 10 21.7	9 59.5	8.96007	9.4075	4.72	5.22	9 22 33.4	40
11	19 55 51.40	55 42.04	19 15 55.0	15 36.6	9.02428	9.3162	4.68	5.23	10 22 31.9	41
12	19 58 33.41	58 22.73	19 20 17.7	20 3.5	9.07580	9.1974	4.64	5.24	11 22 30.6	42
13	20 1 33.77	1 21.88	19 23 28.4	23 18.6	9.11810	9.0297	4.61	5.25	12 22 29.6	43
14	20 4 50.91	4 37.92	19 25 25.8	25 20.6	9.15348	8.7469	4.57	5.25	13 22 28.9	44
15	20 8 23.39	8 9.40	19 26 8.8	26 8.5	9.18347	−7.5740	4.53	5.26	14 22 28.5	45
16	20 12 9.88	11 55.02	19 25 36.5	25 41.1	9.20914	+8.6879	4.49	5.26	15 22 28.4	46
17	20 16 9.17	15 53.54	19 23 48.2	23 57.7	9.23137	9.0075	4.45	5.27	16 22 28.4	47
18	20 20 20.16	20 3.86	19 20 43.3	20 57.6	9.25068	9.1911	4.41	5.27	17 22 28.6	48
19	20 24 41.83	24 24.96	19 16 21.2	16 40.3	9.26764	9.3201	4.37	5.27	18 22 29.0	49
20	20 29 13.27	28 55.92	19 10 41.4	11 5.3	9.28263	9.4200	4.33	5.27	19 22 29.6	50
21	20 33 53.66	33 35.91	19 3 43.7	4 12.1	9.29590	9.5013	4.30	5.28	20 22 30.3	51
22	20 38 42.26	38 24.21	18 55 27.8	56 0.7	9.30773	9.5702	4.26	5.28	21 22 31.2	52
23	20 43 38.37	43 20.08	18 45 53.4	46 30.7	9.31827	9.6296	4.22	5.28	22 22 32.2	53
24	20 48 41.38	48 22.91	18 35 0.4	35 42.0	9.32775	9.6819	4.18	5.28	23 22 33.3	54
25	20 53 50.73	53 32.17	18 22 48.8	23 34.5	9.33628	9.7287	4.15	5.28	24 22 34.5	55
26	20 59 5.91	58 47.30	18 9 18.6	10 8.2	9.34400	9.7708	4.11	5.28	25 22 35.8	56
27	21 4 26.48	4 7.88	17 54 20.7	55 23.0	9.35101	9.8092	4.08	5.28	26 22 37.2	57
28	21 9 52.02	9 33.48	17 38 22.2	39 19.0	9.35738	9.8444	4.04	5.28	27 22 38.7	58
29	21 15 22.16	15 3.73	17 20 56.3	21 56.3	9.36321	9.8771	4.01	5.28	28 22 40.2	59
30	21 20 56.58	20 38.31	17 2 12.0	3 15.1	9.36858	9.9074	3.98	5.28	29 22 41.8	60
31	21 26 34.98	26 16.90	−16 42 9.5	43 15.3	+9.37350	+9.9355	+3.95	+5.27	30 22 43.5	61

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t.		Log Coefficient of t².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
Mar. 1	21 20 56.58	20 38.31	−17 2 12.0	3 15.1	+9.36858	+9.9074	+3.98	+5.28	0 22 41.8	60
2	21 26 34.98	26 16.90	16 42 9.5	43 15.3	9.37350	9.9355	3.95	5.27	1 22 43.5	61
3	21 32 17.10	31 59.26	16 20 48.9	21 57.2	9.37808	9.9620	3.92	5.27	2 22 45.3	62
4	21 38 2.71	37 45.14	15 58 10.6	59 21.2	9.38232	9.9870	3.90	5.27	3 22 47.1	63
5	21 43 51.60	43 34.31	15 34 14.7	35 27.3	9.38630	0.0103	3.88	5.27	4 22 49.0	64
6	21 49 43.61	49 26.65	15 9 1.5	10 15.8	9.39007	0.0324	3.85	5.27	5 22 50.9	65
7	21 55 38.58	55 21.96	14 42 31.3	43 47.1	9.39359	0.0534	3.84	5.27	6 22 52.9	66
8	22 1 36.38	1 20.14	14 14 44.4	16 1.4	9.39697	0.0733	3.82	5.26	7 22 54.9	67
9	22 7 36.91	7 21.07	13 45 41.0	46 58.9	9.40021	0.0923	3.81	5.26	8 22 57.0	68
10	22 13 40.11	13 24.69	13 15 21.4	16 39.9	9.40336	0.1105	3.80	5.26	9 22 59.1	69
11	22 19 45.91	19 30.94	12 43 46.0	45 4.8	9.40641	0.1279	3.79	5.26	10 23 1.3	70
12	22 25 54.28	25 39.77	12 10 55.2	12 14.0	9.40942	0.1445	3.79	5.26	11 23 3.5	71
13	22 32 5.20	31 51.16	11 36 49.4	38 8.0	9.41241	0.1604	3.79	5.26	12 23 5.7	72
14	22 38 18.67	38 5.13	11 1 28.9	2 46.8	9.41538	0.1755	3.79	5.25	13 23 8.0	73
15	22 44 34.69	44 21.66	10 24 54.1	26 11.1	9.41834	0.1902	3.79	5.25	14 23 10.3	74
16	22 50 53.30	50 40.81	9 47 5.5	48 21.2	9.42134	0.2043	3.80	5.25	15 23 12.7	75
17	22 57 14.56	57 2.62	9 8 3.8	9 18.0	9.42440	0.2178	3.82	5.24	16 23 15.1	76
18	23 3 38.55	3 27.18	8 27 49.4	29 1.7	9.42753	0.2309	3.83	5.24	17 23 17.5	77
19	23 10 5.34	9 54.57	7 46 23.0	47 33.0	9.43071	0.2433	3.84	5.23	18 23 20.0	78
20	23 16 35.03	16 24.86	7 3 45.5	4 52.8	9.43401	0.2553	3.86	5.23	19 23 22.6	79
21	23 23 7.71	22 58.18	6 19 57.5	21 1.8	9.43738	0.2669	3.87	5.22	20 23 25.2	80
22	23 29 43.50	29 34.63	5 35 0.3	36 1.3	9.44086	0.2781	3.89	5.22	21 23 27.9	81
23	23 36 22.53	36 14.34	4 48 54.9	49 52.1	9.44446	0.2887	3.91	5.21	22 23 30.6	82
24	23 43 4.93	42 57.44	4 1 42.6	2 35.7	9.44816	0.2988	3.93	5.20	23 23 33.3	83
25	23 49 50.82	49 44.07	3 13 25.1	14 13.6	9.45197	0.3084	3.94	5.18	24 23 36.2	84
26	23 56 40.34	56 34.36	2 24 4.4	24 47.9	9.45588	0.3175	3.96	5.17	25 23 39.1	85
27	0 3 33.61	3 28.42	1 33 42.7	34 20.8	9.45989	0.3261	3.97	5.15	26 23 42.0	87
28	0 10 30.75	10 26.39	− 0 42 22.5	42 54.8	9.46398	0.3342	3.98	5.13	27 23 45.0	88
29	0 17 31.86	17 28.36	+ 0 9 53.1	9 27.0	9.46810	0.3416	3.99	5.10	28 23 48.1	89
30	0 24 37.01	24 34.41	1 3 0.5	2 41.0	9.47226	0.3484	3.99	5.06	29 23 51.3	90
31	0 31 46.25	31 44.59	1 56 55.4	56 42.9	9.47642	0.3544	4.00	5.02	30 23 54.5	91
Apr. 1	0 38 59.60	38 58.92	2 51 33.1	51 28.0	9.48053	0.3597	3.99	4.95	0 23 57.8	92
2	0 46 17.02	46 17.36	3 46 48.0	46 50.6	9.48452	0.3641	3.98	4.87	2 0 1.1	93
3	0 53 38.40	53 39.80	4 42 33.6	42 44.2	9.48836	0.3677	3.96	4.75	3 0 4.5	94
4	1 1 3.58	1 6.07	5 38 42.6	39 1.4	9.49195	0.3702	3.93	4.56	4 0 8.0	95
5	1 8 32.29	8 35.91	6 35 6.6	35 33.8	9.49522	0.3716	3.89	+4.15	5 0 11.6	96
6	1 16 4.19	16 8.96	7 31 36.4	32 12.1	9.49809	0.3717	3.82	−3.98	6 0 15.2	97
7	1 23 38.84	23 44.79	8 28 2.1	28 46.2	9.50045	0.3705	3.73	4.57	7 0 18.8	98
8	1 31 15.67	31 22.82	9 24 12.5	25 4.9	9.50222	0.3677	3.56	4.82	8 0 22.5	99
9	1 38 53.99	39 2.34	10 19 55.6	20 56.1	9.50328	0.3634	+3.24	4.98	9 0 26.2	100
10	1 46 33.02	46 42.56	11 14 59.1	16 7.2	9.50354	0.3574	−2.68	5.10	10 0 29.9	101
11	1 54 11.85	54 22.55	12 9 10.2	10 25.4	9.50289	0.3496	3.46	5.20	11 0 33.6	102
12	2 1 49.47	2 1.30	13 2 15 7	3 37.2	9.50123	0.3396	3.74	5.28	12 0 37.3	103
13	2 9 24.78	9 37.70	13 54 2.7	55 29.9	9.49848	0.3278	3.92	5.34	13 0 41.0	104
14	2 16 56.63	17 10.55	14 44 18.5	45 50.2	9.49459	0.3138	4.05	5.40	14 0 44.6	105
15	2 24 23.81	24 38.64	15 32 51.4	34 26.7	9.48943	0.2976	4.16	5.44	15 0 48.1	106
16	2 31 45.07	32 0.73	16 19 30.6	21 8.6	9.48300	0.2793	4.23	5.47	16 0 51.5	107
17	2 38 59.19	39 15.55	17 4 6.5	5 45.8	9.47526	0.2584	4.31	5.50	17 0 54.8	108
18	2 46 4.95	46 21.89	17 46 30.6	48 10.1	9.46612	0.2354	4.36	5.52	18 0 57.9	109
19	2 53 1.19	53 18.58	18 26 36.0	28 14.7	9.45559	0.2097	4.41	5.54	19 1 0.9	110
20	2 59 46.79	0 4.49	19 4 17.1	5 53.9	9.44361	0.1816	4.45	5.55	20 1 3.8	111
21	3 6 20.69	6 38.55	19 39 30.0	41 3.9	9.43016	0.1508	4.49	5.56	21 1 6.4	112
22	3 12 41.90	12 59.78	20 12 11.8	13 41.7	9.41516	0.1172	4.52	5.57	22 1 8.8	113
23	3 18 49.49	19 7.23	20 42 20.9	43 46.1	9.39852	0.0802	4.54	5.57	23 1 11.0	114
24	3 24 42.59	25 0.06	21 9 56.7	11 16.4	9.38019	0.0401	4.57	5.57	24 1 12.9	115
25	3 30 20.39	30 37.46	21 34 59.4	36 13.1	9.36005	9.9959	4.59	5.56	25 1 14.6	116
26	3 35 42.17	35 58.69	21 57 30.1	58 37.2	9.33792	9.9471	4.61	5.56	26 1 16.0	117
27	3 40 47.22	41 3.08	22 17 30.2	18 30.3	9.31360	9.8928	4.62	5.55	27 1 17.1	118
28	3 45 34.87	45 49.93	22 35 1.5	35 54.2	9.28687	9.8318	4.64	5.55	28 1 17.9	119
29	3 50 4.53	50 18.69	22 50 6.4	50 51.6	9.25740	9.7620	4.65	5.54	29 1 18.5	120
30	3 54 15.62	54 28.79	23 2 47.2	3 24.7	9.22478	9.6804	4.66	5.53	30 1 18.7	121
31	3 58 7.59	58 19.69	+23 13 6.3	13 36.1	+9.18848	+9.5813	−4.67	−5.53	31 1 18.6	122

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t.		Log Coefficient of t².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
May. 1	3 58 7.59	58 19.69	+23 13 6.3	13 36.1	+9.18848	+9.5813	−4.67	−5.53	1 1 18.6	122
2	4 1 39.96	1 50.92	23 21 6.2	21 28.3	9.14789	9.4557	4.68	5.52	2 1 18.2	123
3	4 4 52.28	5 2.04	23 26 49.6	27 4.2	9.10209	9.2825	4.69	5.51	3 1 17.4	124
4	4 7 44.15	7 52.68	23 30 18.8	30 26.2	9.04986	8.9969	4.70	5.50	4 1 16.3	125
5	4 10 15.22	10 22.50	23 31 36.4	31 36.9	8.98957	+7.9420	4.71	5.49	5 1 14.9	126
6	4 12 25.23	12 31.26	23 30 44.9	30 39.0	8.91868	−8.9031	4.71	5.48	6 1 13.1	127
7	4 14 13.99	14 18.79	23 27 46.8	27 34.9	8.83331	9.2227	4.71	5.48	7 1 11.0	128
8	4 15 41.43	15 45.06	23 22 44.8	22 27.4	8.72700	9.4015	4.71	5.46	8 1 8.5	129
9	4 16 47.60	16 50.11	23 15 41.9	15 19.8	8.58656	9.5250	4.71	5.45	9 1 5.6	130
10	4 17 32.67	17 34.15	23 6 41.1	6 15.1	8.38097	9.6187	4.70	5.44	10 1 2.4	131
11	4 17 56.98	17 57.54	22 55 46.1	55 16.9	+7.99024	9.6934	4.69	5.42	11 0 58.9	132
12	4 18 1.03	18 0.80	22 43 1.2	42 29.8	−7.61028	9.7546	4.67	5.40	12 0 55.0	133
13	4 17 45.52	17 44.63	22 28 31.3	27 58.7	8.23958	9.8056	4.65	5.38	13 0 50.8	134
14	4 17 11.37	17 9.97	22 12 22.4	11 49.7	8.47632	9.8485	4.63	5.35	14 0 46.3	135
15	4 16 19.71	16 17.97	21 54 41.3	54 9.5	8.61972	9.8847	4.59	5.31	15 0 41.5	136
16	4 15 11.88	15 9.97	21 35 36.1	35 6.1	8.71907	9.9152	4.55	5.26	16 0 36.4	137
17	4 13 49.45	13 47.52	21 15 16.2	14 49.1	8.79186	9.9398	4.49	5.19	17 0 31.1	138
18	4 12 14.18	12 12.38	20 53 52.3	53 20.0	8.84618	9.9595	4.42	5.10	18 0 25.6	139
19	4 10 28.04	10 26.51	20 31 36.2	31 17.4	8.88649	9.9745	4.33	4.97	19 0 19.9	140
20	4 8 33.14	8 31.98	20 8 41.3	8 27.7	8.91554	9.9845	4.20	4.77	20 0 14.1	141
21	4 6 31.71	6 31.01	19 45 22.1	45 14.2	8.93482	9.9896	4.01	−4.35	21 0 8.1	142
22	4 4 26.06	4 25.87	19 21 53.7	21 51.6	8.94537	9.9900	−3.66	+4.20	22 0 2.1	143
23	4 2 18.55	2 18.90	18 58 31.9	58 35.7	8.94773	9.9857	+3.08	4.74	22 23 56.1	144
24	4 0 11.51	0 12.38	18 35 32.8	35 42.2	8.94212	9.9759	3.82	4.97	23 23 50.0	145
25	3 58 7.22	58 8.57	18 13 12.2	13 26.8	8.92864	9.9609	4.07	5.11	24 23 44.1	146
26	3 56 7.85	56 9.61	17 51 45.3	52 4.3	8.90696	9.9402	4.23	5.22	25 23 38.2	147
27	3 54 15.44	54 17.52	17 31 26.6	31 49.3	8.87623	9.9135	4.33	5.29	26 23 32.4	148
28	3 52 31.88	52 34.16	17 12 29.4	12 54.7	8.83530	9.8799	4.41	5.35	27 23 26.7	149
29	3 50 58.86	51 1.21	16 55 5.8	55 32.5	8.78236	9.8386	4.46	5.40	28 23 21.2	150
30	3 49 37.86	49 40.14	16 39 25.8	39 52.9	8.71420	9.7886	4.50	5.43	29 23 16.0	151
31	3 48 30.12	48 32.20	16 25 37.8	26 4.1	8.62511	9.7278	4.54	5.46	30 23 10.9	152
June 1	3 47 36.71	47 38.44	16 13 48.6	14 13.0	8.50374	9.6533	4.56	5.47	0 23 6.0	153
2	3 46 58.51	46 59.75	16 4 3.1	4 24.4	8.32380	9.5597	4.58	5.49	1 23 1.5	154
3	3 46 36.22	46 36.86	15 56 24.5	56 41.8	−7.99209	9.4376	4.60	5.49	2 22 57.2	155
4	3 46 30.37	46 30.27	15 50 54.6	51 7.0	+7.24131	9.2655	4.61	5.49	3 22 53.2	156
5	3 46 41.34	46 40.41	15 47 33.5	47 40.3	8.13078	8.9783	4.61	5.49	4 22 49.4	157
6	3 47 9.37	47 7.50	15 46 20.1	46 20.8	8.40548	−7.8502	4.62	5.48	5 22 45.9	158
7	3 47 54.62	47 51.75	15 47 12.1	47 6.2	8.57315	+8.8977	4.62	5.47	6 22 42.7	159
8	3 48 57.16	48 53.22	15 50 6.4	49 53.6	8.69406	9.2112	4.62	5.46	7 22 39.8	160
9	3 50 16.98	50 11.92	15 54 59.0	54 39.1	8.78829	9.3859	4.62	5.44	8 22 37.2	161
10	3 51 54.02	51 47.80	16 1 45.1	1 18.0	8.86542	9.5055	4.62	5.42	9 22 34.8	162
11	3 53 48.19	53 40.79	16 10 19.6	9 45.5	8.93055	9.5950	4.61	5.39	10 22 32.8	163
12	3 55 59.39	55 50.79	16 20 36.6	19 55.6	8.98678	9.6652	4.61	5.37	11 22 31.0	164
13	3 58 27.51	58 17.70	16 32 30.0	31 42.5	9.03626	9.7221	4.61	5.34	12 22 29.5	165
14	4 1 12.43	1 1.42	16 45 53.3	44 59.6	9.08039	9.7691	4.60	5.30	13 22 28.3	166
15	4 4 14.03	4 1.84	17 0 39.8	59 40.4	9.12016	9.8082	4.60	5.27	14 22 27.4	167
16	4 7 32.19	7 18.85	17 16 42.6	15 38.0	9.15639	9.8409	4.60	5.22	15 22 26.7	168
17	4 11 6.85	10 52.38	17 33 54.6	32 45.5	9.18973	9.8686	4.60	5.17	16 22 26.3	169
18	4 14 57.94	14 42.38	17 52 8.4	50 55.4	9.22056	9.8917	4.60	5.12	17 22 26.2	170
19	4 19 5.41	18 48.82	18 11 16.5	10 0.4	9.24929	9.9108	4.60	5.05	18 22 26.4	171
20	4 23 29.24	23 11.67	18 31 11.0	29 52.5	9.27623	9.9262	4.60	4.97	19 22 26.8	172
21	4 28 9.43	27 50.94	18 51 44.0	50 23.9	9.30162	9.9383	4.60	4.86	20 22 27.5	173
22	4 33 6.00	32 46.67	19 12 47.2	11 26.2	9.32562	9.9473	4.60	4.72	21 22 28.5	174
23	4 38 18.98	37 58.88	19 34 12.0	32 51.0	9.34839	9.9531	4.60	4.49	22 22 29.8	175
24	4 43 48.39	43 27.62	19 55 49.6	54 29.5	9.37011	9.9558	4.60	+3.94	23 22 31.3	176
25	4 49 34.27	49 12.93	20 17 30.7	16 12.3	9.39079	9.9554	4.60	−4.17	24 22 33.1	177
26	4 55 36.63	55 14.83	20 39 5.6	37 49.5	9.41055	9.9517	4.60	4.60	25 22 35.2	178
27	5 1 55.46	1 33.32	21 0 24.2	59 11.6	9.42942	9.9444	4.60	4.81	26 22 37.5	179
28	5 8 30.73	8 8.40	21 21 16.0	20 7.5	9.44744	9.9332	4.60	4.96	27 22 40.2	180
29	5 15 22.34	14 59.94	21 41 30.0	40 26.3	9.46461	9.9176	4.59	5.07	28 22 43.1	181
30	5 22 30.10	22 7.80	22 0 54.9	59 56.6	9.48089	9.8972	4.58	5.17	29 22 46.3	182
31	5 29 53.76	29 31.74	+22 19 18.8	18 26.5	+9.49628	+9.8708	+4.57	−5.25	30 22 49.7	183

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t.		Log Coefficient of t².		Mean Solar Time of Meridian Transit.	Side-real Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
July 1	5 29 53.76	29 31.74	+22 19 18.8	18 26.5	+9.49628	+9.8708	+4.57	−5.25	0 22 49.7	183
2	5 37 32.93	37 11.37	22 36 20.7	35 43.8	9.51074	9.8373	4.56	5.31	1 22 53.4	184
3	5 45 27.09	45 6.16	22 52 15.4	51 36.2	9.52419	9.7954	4.54	5.37	2 22 57.4	185
4	5 53 35.55	53 15.46	23 6 24.0	5 51.6	9.53656	9.7426	4.51	5.42	3 23 1.6	186
5	6 1 57.48	1 38.43	23 18 43.5	18 17.9	9.54781	9.6748	4.48	5.47	4 23 6.0	187
6	6 10 31.87	10 14.04	23 29 2.3	28 43.2	9.55785	9.5856	4.43	5.50	5 23 10.6	188
7	6 19 17.53	19 1.11	23 37 9.5	36 56.5	9.56660	9.4630	4.38	5.53	6 23 15.5	189
8	6 28 13.07	27 58.25	23 42 55.6	42 48.0	9.57402	9.2773	4.31	5.56	7 23 20.5	190
9	6 37 16.98	37 3.90	23 46 12.2	46 9.3	9.58006	+8.9186	4.21	5.58	8 23 25.6	191
10	6 46 27.61	46 16.41	23 46 52.4	46 53.2	9.58470	−8.4415	4.08	5.59	9 23 30.9	192
11	6 55 43.23	55 34.02	23 44 51.2	44 54.6	9.58790	9.1491	3.89	5.60	10 23 36.2	193
12	7 5 2.05	4 54.89	23 40 5.6	40 10.2	9.58969	9.4081	+3.53	5.60	11 23 41.6	194
13	7 14 22.29	14 17.23	23 32 34.1	32 38.9	9.59011	9.5693	−2.91	5.60	12 23 47.0	195
14	7 23 42.20	23 30.25	23 22 17.9	22 21.6	9.58919	9.6854	3.68	5.59	13 23 52.4	196
15	7 33 0.12	32 59.27	23 9 19.5	9 20.8	9.58703	9.7753	3.93	5.58	14 23 57.8	197
16	7 42 14.51	42 15.70	22 53 43.1	53 40.9	9.58371	9.8474	4.07	5.57	16 0 3.1	198
17	7 51 23.99	51 27.16	22 35 34.3	35 27.6	9.57932	9.9071	4.17	5.55	17 0 8.3	199
18	8 0 27.33	0 32.38	22 15 0.0	14 47.8	9.57396	9.9570	4.24	5.52	18 0 13.5	200
19	8 9 23.48	9 30.31	21 52 8.0	51 49.5	9.56776	9.9993	4.29	5.49	19 0 18.5	201
20	8 18 11.57	18 20.07	21 27 6.6	26 41.2	9.56082	0.0356	4.33	5.46	20 0 23.4	202
21	8 26 50.88	27 0.92	21 0 4.6	59 31.9	9.55322	0.0668	4.35	5.43	21 0 28.1	203
22	8 35 20.87	35 32.39	20 31 10.9	30 30.4	9.54508	0.0936	4.37	5.39	22 0 32.7	204
23	8 43 41.14	43 53.88	20 0 34.4	59 45.9	9.53652	0.1169	4.38	5.35	23 0 37.1	205
24	8 51 51.41	52 5.32	19 28 24.0	27 27.4	9.52759	0.1371	4.39	5.31	24 0 41.3	206
25	8 59 51.54	0 6.49	18 54 48.2	53 43.4	9.51836	0.1547	4.39	5.27	25 0 45.4	207
26	9 7 41.46	7 57.35	18 19 55.3	18 42.5	9.50891	0.1697	4.39	5.22	26 0 49.3	208
27	9 15 21.16	15 37.87	17 43 53.0	42 32.3	9.49929	0.1829	4.39	5.17	27 0 53.0	209
28	9 22 50.73	23 8.17	17 6 48.9	5 20.5	9.48957	0.1943	4.38	5.12	28 0 56.5	210
29	9 30 10.31	30 28.39	16 28 50.0	27 14.2	9.47976	0.2040	4.38	5.06	29 0 59.9	211
30	9 37 20.04	37 38.65	15 50 3.0	48 20.0	9.46991	0.2125	4.37	5.01	30 1 3.1	212
31	9 44 20.12	44 39.20	15 10 34.0	8 44.3	9.46002	0.2197	4.36	4.94	31 1 6.2	213
Aug. 1	9 51 10.76	51 30.23	14 30 28.8	28 32.7	9.45016	0.2257	4.35	4.87	1 1 9.1	214
2	9 57 52.18	58 11.97	13 49 53.1	47 50.9	9.44032	0.2307	4.34	4.79	2 1 11.8	215
3	10 4 24.62	4 44.67	13 8 51.9	6 44.1	9.43050	0.2348	4.33	4.70	3 1 14.4	216
4	10 10 48.31	11 8.55	12 27 30.0	25 17.0	9.42074	0.2380	4.31	4.60	4 1 16.9	217
5	10 17 3.48	17 23.88	11 45 51.8	43 34.1	9.41099	0.2404	4.30	4.45	5 1 19.2	218
6	10 23 10.34	23 30.84	11 4 1.7	1 39.6	9.40127	0.2421	4.29	4.28	6 1 21.4	219
7	10 29 9.10	29 29.63	10 22 3.7	19 37.8	9.39161	0.2431	4.28	4.00	7 1 23.4	220
8	10 34 59.98	35 20.51	9 40 1.6	37 32.2	9.38196	0.2435	4.27	−3.23	8 1 25.3	221
9	10 40 43.14	41 3.65	8 57 58.8	55 26.3	9.37230	0.2433	4.26	+3.83	9 1 27.1	222
10	10 46 18.75	46 39.19	8 15 58.8	13 23.7	9.36265	0.2426	4.25	4.19	10 1 28.7	223
11	10 51 46.96	52 7.29	7 34 5.1	31 27.8	9.35293	0.2414	4.24	4.35	11 1 30.2	224
12	10 57 7.01	57 28.09	6 52 20.9	49 41.9	9.34318	0.2393	4.24	4.49	12 1 31.6	225
13	11 2 21.70	2 41.71	6 10 49.3	8 9.0	9.33334	0.2369	4.23	4.57	13 1 32.9	226
14	11 7 28.40	7 48.20	5 29 33.1	26 52.0	9.32336	0.2338	4.23	4.65	14 1 34.1	227
15	11 12 28.09	12 47.63	4 48 35.5	45 53.9	9.31322	0.2303	4.22	4.71	15 1 35.1	228
16	11 17 20.81	17 40.08	4 7 59.4	5 17.8	9.30292	0.2262	4.22	4.77	16 1 36.1	229
17	11 22 6.58	22 25.55	3 27 47.9	25 6.6	9.29234	0.2216	4.23	4.82	17 1 36.9	230
18	11 26 45.36	27 3.99	2 48 3.8	45 23.4	9.28142	0.2162	4.23	4.87	18 1 37.6	231
19	11 31 17.11	31 35.37	2 8 50.3	6 11.1	9.27012	0.2103	4.23	4.91	19 1 38.2	232
20	11 35 41.74	35 59.58	1 30 10.6	27 33.2	9.25835	0.2036	4.24	4.95	20 1 38.6	233
21	11 39 59.15	40 16.55	0 52 7.9	49 32.5	9.24606	0.1964	4.25	4.99	21 1 38.9	234
22	11 44 9.20	44 26.13	+ 0 14 45.4	12 12.6	9.23312	0.1883	4.26	5.02	22 1 39.1	235
23	11 48 11.60	48 28.12	− 0 21 53.3	24 23.1	9.21938	0.1792	4.27	5.06	23 1 39.2	236
24	11 52 6.39	52 22.27	0 57 44.4	0 10.7	9.20473	0.1691	4.29	5.09	24 1 39.2	237
25	11 55 53.03	56 8.31	1 32 44.1	35 6.5	9.18897	0.1581	4.31	5.13	25 1 39.0	238
26	11 59 31.28	59 45.91	2 6 48.1	9 6.0	9.17193	0.1458	4.32	5.16	26 1 38.7	239
27	12 3 0.77	3 14 73	2 39 51.9	42 4.8	9.15333	0.1320	4.35	5.20	27 1 38.2	240
28	12 6 21.06	6 34.29	3 11 50.5	13 58.0	9.13288	0.1168	4.37	5.23	28 1 37.6	241
29	12 9 31.67	9 44.13	3 42 38.9	44 40.5	9.11022	0.0996	4.39	5.26	29 1 36.8	242
30	12 12 32.05	12 43.69	4 12 11.2	14 6.4	9.08486	0.0802	4.42	5.30	30 1 35.9	243
31	12 15 21.58	15 32.34	− 4 40 21.3	42 9.4	+9.05619	−0.0582	−4.44	+5.33	31 1 34.8	244

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of *t*.		Log Coefficient of *t*².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
Sept. 1	12 17 59.59	18 9.43	− 5 7 2.4	8 43.1	+9.02354	−0.0331	−4.47	+5.37	1 1 33.5	245
2	12 20 25.35	20 34.22	5 32 7.1	33 39.7	8.98578	0.0042	4.50	5.40	2 1 31.9	246
3	12 22 38.02	22 45.87	5 55 27.4	56 51.4	8.94143	9.9704	4.53	5.44	3 1 30.2	247
4	12 24 36.71	24 43.51	6 16 54.5	18 9.5	8.88849	9.9305	4.56	5.47	4 1 28.2	248
5	12 26 20.47	26 26.17	6 36 19.0	37 24.5	8.82378	9.8829	4.58	5.51	5 1 26.0	249
6	12 27 48.31	27 52.89	6 53 30.3	54 25.8	8.74217	9.8243	4.61	5.54	6 1 23.5	250
7	12 28 59.17	29 2.62	7 8 17.3	9 2.6	8.63410	9.7507	4.64	5.58	7 1 20.7	251
8	12 29 51.96	29 54.27	7 20 28.3	21 3.1	8.47903	9.6537	4.66	5.61	8 1 17.6	252
9	12 30 25.59	30 26.78	7 29 50.5	30 14.7	8.21621	9.5168	4.69	5.64	9 1 14.3	253
10	12 30 38.99	30 39.10	7 36 10.4	36 24.1	+7.31293	9.2957	4.71	5.67	10 1 10.5	254
11	12 30 31.18	30 30.30	7 39 14.7	39 18.3	−8.11418	−8.7549	4.73	5.70	11 1 6.5	255
12	12 30 1.27	29 59.47	7 38 49.7	38 43.7	8.45675	+8.9690	4.74	5.73	12 1 2.0	256
13	12 29 8.54	29 5.96	7 34 42.2	34 27.6	8.64992	9.4014	4.75	5.75	13 0 57.3	257
14	12 27 52.57	27 49.40	7 26 40.1	26 18.1	8.78444	9.6219	4.75	5.77	14 0 52.0	258
15	12 26 13.29	26 9.71	7 14 33.2	14 5.4	8.88645	9.7721	4.74	5.78	15 0 46.4	259
16	12 24 11.04	24 7.28	6 58 14.2	57 43.0	8.96712	9.8855	4.72	5.79	16 0 40.4	260
17	12 21 46.72	21 43.04	6 37 40.1	37 7.8	9.03166	9.9756	4.69	5.79	17 0 34.1	261
18	12 19 1.90	18 58.58	6 12 53.1	12 22.4	9.08314	0.0488	4.64	5.77	18 0 27.4	262
19	12 15 58.84	15 56.12	5 44 2.1	43 35.8	9.12322	0.1083	4.56	5.74	19 0 20.5	263
20	12 12 40.56	12 38.68	5 11 23.8	11 4.8	9.15270	0.1563	4.44	5.69	20 0 13.3	264
21	12 9 10.88	9 10.01	4 35 23.9	35 14.7	9.17191	0.1938	4.22	5.61	21 0 5.9	265
22	12 5 34.33	5 34.57	3 56 36.4	56 39.2	9.18075	0.2214	−3.63	5.48	21 23 58.3	266
23	12 1 56.01	1 57.40	3 15 44.0	16 0.0	9.17886	0.2393	+3.96	5.26	22 23 50.8	267
24	11 58 21.47	58 23.91	2 33 36.9	34 6.5	9.16528	0.2477	4.37	+4.68	23 23 43.3	268
25	11 54 56.55	54 59.85	1 51 9.9	51 52.2	9.13874	0.2460	4.57	−4.96	24 23 36.0	269
26	11 51 46.94	51 50.83	1 9 21.1	10 14.4	9.09715	0.2344	4.70	5.36	25 23 28.9	270
27	11 48 58.08	49 2.21	− 0 29 8.2	30 9.9	9.03696	0.2120	4.79	5.56	26 23 22.2	271
28	11 46 34.87	46 38.83	+ 0 8 34.3	7 27.7	8.95206	0.1782	4.86	5.68	27 23 15.9	272
29	11 44 41.45	44 44.85	0 42 57.3	41 49.6	8.82998	0.1313	4.90	5.77	28 23 10.1	273
30	11 43 21.09	43 23.54	1 13 18.7	12 13.7	8.64084	0.0692	4.93	5.82	29 23 4.8	274
Oct. 1	11 42 36.10	42 37.24	1 39 5.2	38 6.7	−8.26945	9.9878	4.95	5.86	0 23 0.1	275
2	11 42 27.83	42 27.41	1 59 52.5	59 3.6	+7.85532	9.8798	4.95	5.88	1 22 56.0	276
3	11 42 56.69	42 54.51	2 15 25.4	14 48.9	8.51668	9.7296	4.95	5.89	2 22 52.5	277
4	11 44 2.22	43 58.18	2 25 36.8	25 14.4	8.76353	9.4951	4.93	5.89	3 22 49.6	278
5	11 45 43.28	45 37.35	2 30 27.2	30 20.2	8.91466	+8.9605	4.91	5.88	4 22 47.3	279
6	11 47 58.13	47 50.37	2 30 3.3	30 12.1	9.02065	−9.0903	4.88	5.86	5 22 45.6	280
7	11 50 44.53	50 35.05	2 24 37.5	25 1.9	9.10018	9.5152	4.85	5.84	6 22 44.4	281
8	11 53 59.96	53 48.93	2 14 25.9	15 5.1	9.16191	9.7157	4.80	5.81	7 22 43.7	282
9	11 57 41.71	57 29.30	1 59 47.8	0 40.9	9.21082	9.8435	4.75	5.77	8 22 43.4	283
10	12 1 47.00	1 33.43	1 41 4.5	42 9.9	9.25010	9.9344	4.70	5.73	9 22 43.6	284
11	12 6 13.07	5 58.56	1 18 38.6	19 54.8	9.28187	0.0029	4.64	5.68	10 22 44.0	285
12	12 10 57.27	10 42.02	0 52 52.9	54 18.2	9.30765	0.0559	4.58	5.63	11 22 44.8	286
13	12 15 57.10	15 41.31	+ 0 24 10.0	25 42.7	9.32857	0.0978	4.51	5.57	12 22 45.9	287
14	12 21 10.26	20 54.12	− 0 7 7.9	5 29.5	9.34560	0.1313	4.43	5.51	13 22 47.1	288
15	12 26 34.67	26 18.34	0 40 39.9	38 57.1	9.35936	0.1581	4.35	5.44	14 22 48.6	289
16	12 32 8.47	31 52.10	1 16 6.4	14 21.0	9.37048	0.1796	4.27	5.37	15 22 50.2	290
17	12 37 50.05	37 33.75	1 53 9.2	51 22.2	9.37945	0.1968	4.19	5.28	16 22 51.9	291
18	12 43 38.00	43 21.87	2 31 31.8	29 44.5	9.38660	0.2103	4.09	5.19	17 22 53.8	292
19	12 49 31.12	49 15.26	3 10 58.8	9 12.0	9.39230	0.2208	4.00	5.09	18 22 55.7	293
20	12 55 28.41	55 12.89	3 51 16.6	49 31.2	9.39683	0.2288	3.90	4.97	19 22 57.8	294
21	13 1 29.01	1 13.88	4 32 13.1	30 29.8	9.40036	0.2347	3.80	4.83	20 22 59.8	295
22	13 7 32.22	7 17.53	5 13 37.5	11 56.9	9.40314	0.2387	3.70	4.64	21 23 1.9	296
23	13 13 37.50	13 23.29	5 55 20.1	53 42.7	9.40530	0.2410	3.59	4.36	22 23 4.1	297
24	13 19 44.39	19 30.67	6 37 12.4	35 38.6	9.40697	0.2421	3.47	−3.72	23 23 6.3	298
25	13 25 52.52	25 39.32	7 19 6.7	17 36.7	9.40826	0.2418	3.37	+4.05	24 23 8.5	299
26	13 32 1.61	31 48.95	8 0 56.4	59 30.6	9.40926	0.2405	3.26	4.40	25 23 10.7	300
27	13 38 11.47	37 59.36	8 42 35.7	41 14.2	9.41007	0.2383	3.17	4.57	26 23 12.9	301
28	13 44 21.95	44 10.40	9 23 59.4	22 42.3	9.41073	0.2351	3.09	4.70	27 23 15.1	302
29	13 50 32.94	50 21.95	10 5 2.7	3 50.1	9.41127	0.2311	3.03	4.77	28 23 17.4	303
30	13 56 44.37	56 33.95	10 45 41.7	44 33.7	9.41176	0.2264	3.01	4.83	29 23 19.6	304
31	14 2 56.22	2 46.37	11 25 52.6	24 49.2	9.41225	0.2211	3.01	4.88	30 23 21.9	305
32	14 9 8.49	8 59.21	−12 5 32.2	4 33.4	+9.41276	−0.2151	+3.03	+4.92	31 23 24.1	306

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension. At Mean Noon.	Apparent Right Ascension. At Transit.	Apparent Declination. At Mean Noon.	Apparent Declination. At Transit.	Log Coefficient of t. In R.A.	Log Coefficient of t. In Dec.	Log Coefficient of t^2. In R.A.	Log Coefficient of t^2. In Dec.	Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
d	h m s	m s	° ′ ″	′ ″					d h m	d
Nov. 1	14 9 8.49	8 59.21	−12 5 32.2	4 33.4	+9.41276	−0.2151	+3.03	+4.92	0 23 24.1	306
2	14 15 21.20	15 12.50	12 44 37.6	43 43.3	9.41328	0.2085	3.05	4.95	1 23 26.4	307
3	14 21 34.38	21 26.26	13 23 6.0	22 16.2	9.41385	0.2013	3.10	4.98	2 23 28.7	308
4	14 27 48.08	27 40.54	14 0 55.0	0 9.7	9.41449	0.1935	3.15	5.00	3 23 31.0	309
5	14 34 2.36	33 55.41	14 38 2.6	37 21.7	9.41521	0.1852	3.20	5.02	4 23 33.3	310
6	14 40 17.29	40 10.94	15 14 26.6	13 50.2	9.41601	0.1764	3.23	5.04	5 23 35.6	311
7	14 46 32.95	46 27.19	15 50 5.1	49 32.7	9.41690	0.1670	3.28	5.05	6 23 37.9	312
8	14 52 49.41	52 44.24	16 24 56.5	24 28.1	9.41786	0.1571	3.33	5.08	7 23 40.3	313
9	14 59 6.75	59 2.19	16 58 58.9	58 34.5	9.41891	0.1464	3.36	5.08	8 23 42.6	314
10	15 5 25.05	5 21.09	17 32 10.8	31 50.3	9.42006	0.1352	3.40	5.10	9 23 45.0	315
11	15 11 44.38	11 41.04	18 4 30.7	4 13.9	9.42129	0.1234	3.43	5.11	10 23 47.4	316
12	15 18 4.83	18 2.12	18 35 57.0	35 43.8	9.42261	0.1109	3.46	5.12	11 23 49.8	317
13	15 24 26.47	24 24.39	19 6 28.4	6 18.6	9.42400	0.0977	3.48	5.14	12 23 52.2	318
14	15 30 49.36	30 47.93	19 36 3.4	35 56.9	9.42544	0.0837	3.50	5.14	13 23 54.6	319
15	15 37 13.55	37 12.77	20 4 40.6	4 37.2	9.42696	0.0689	3.52	5.15	14 23 57.1	320
16	15 43 39.12	43 39.00	20 32 18.6	32 18.1	9.42853	0.0532	3.53	5.16	15 23 59.6	321
17	15 50 6.10	50 6.66	20 58 56.1	58 58.4	9.43014	0.0366	3.54	5.17	17 0 2.1	322
18	15 56 34.54	56 35.79	21 24 31.6	24 36.4	9.43178	0.0188	3.56	5.18	18 0 4.6	323
19	16 3 4.46	3 6.41	21 49 3.7	49 10.9	9.43345	0.0000	3.56	5.19	19 0 7.2	324
20	16 9 35.87	9 38.53	22 12 31.0	12 40.3	9.43512	9.9798	3.56	5.20	20 0 9.8	325
21	16 16 8.79	16 12.18	22 34 52.2	35 3.4	9.43678	9.9580	3.56	5.21	21 0 12.4	326
22	16 22 43.20	22 47.32	22 56 5.8	56 18.7	9.43841	9.9348	3.55	5.22	22 0 15.0	327
23	16 29 19.08	29 23.95	23 16 10.3	16 24.7	9.44000	9.9096	3.54	5.23	23 0 17.7	328
24	16 35 56.40	36 2.03	23 35 4.4	35 19.9	9.44154	9.8825	3.52	5.24	24 0 20.4	329
25	16 42 35.09	42 41.49	23 52 46.7	53 3.1	9.44301	9.8526	3.50	5.25	25 0 23.1	330
26	16 49 15.08	49 22.26	24 9 15.5	9 32.5	9.44437	9.8201	3.46	5.26	26 0 25.8	331
27	16 55 56.28	56 4.24	24 24 29.5	24 46.9	9.44561	9.7842	3.42	5.26	27 0 28.5	332
28	17 2 38.57	2 47.33	24 38 27.4	38 44.8	9.44674	9.7443	3.38	5.27	28 0 31.3	333
29	17 9 21.84	9 31.40	24 51 7.6	51 24.7	9.44770	9.6994	3.27	5.28	29 0 34.1	334
30	17 16 5.92	16 16.28	25 2 28.4	2 44.8	9.44845	9.6484	3.17	5.29	30 0 36.9	335
Dec. 1	17 22 50.60	23 1.76	25 12 29.0	12 44.4	9.44900	9.5896	2.95	5.30	1 0 39.7	336
2	17 29 35.65	29 47.61	25 21 7.7	21 21.8	9.44927	9.5204	+2.53	5.30	2 0 42.5	337
3	17 36 20.84	36 33.59	25 28 23.2	28 35.6	9.44927	9.4365	−2.59	5.31	3 0 45.3	338
4	17 43 5.87	43 19.40	25 34 14.2	34 24.5	9.44892	9.3309	3.08	5.31	4 0 48.1	339
5	17 49 50.40	50 4.70	25 38 39.7	38 47.5	9.44821	9.1888	3.32	5.32	5 0 50.9	340
6	17 56 34.07	56 49.11	25 41 38.5	41 43.4	9.44702	8.9725	3.50	5.32	6 0 53.7	341
7	18 3 16.43	3 32.19	25 43 9.8	43 11.6	9.44539	−8.5155	3.63	5.33	7 0 56.5	342
8	18 9 57.01	10 13.45	25 43 12.7	43 10.9	9.44318	+8.4596	3.75	5.33	8 0 59.2	343
9	18 16 35.26	16 52.34	25 41 46.7	41 41.0	9.44030	8.9578	3.85	5.33	9 1 1.9	344
10	18 23 10.55	23 28.21	25 38 51.4	38 41.4	9.43669	9.1842	3.95	5.33	10 1 4.6	345
11	18 29 42.18	30 0.36	25 34 26.7	34 12.2	9.43219	9.3323	4.03	5.33	11 1 7.2	346
12	18 36 9.35	36 27.95	25 28 32.7	28 13.3	9.42672	9.4419	4.11	5.33	12 1 9.7	347
13	18 42 31.16	42 50.12	25 21 10.1	20 45.6	9.42005	9.5286	4.19	5.32	13 1 12.1	348
14	18 48 46.59	49 5.80	25 12 20.1	11 50.4	9.41203	9.6000	4.26	5.32	14 1 14.4	349
15	18 54 54.48	55 13.81	25 2 4.2	1 29.1	9.40238	9.6599	4.33	5.31	15 1 16.6	350
16	19 0 53.53	1 12.85	24 50 24.7	49 44.2	9.39083	9.7111	4.40	5.29	16 1 18.7	351
17	19 6 42.25	7 1.40	24 37 24.6	36 38.7	9.37697	9.7550	4.46	5.27	17 1 20.5	352
18	19 12 18.98	12 37.80	24 23 7.7	22 16.6	9.36032	9.7929	4.52	5.24	18 1 22.2	353
19	19 17 41.83	18 0.10	24 7 38.7	6 42.7	9.34028	9.8252	4.59	5.20	19 1 23.6	354
20	19 22 48.71	23 6.23	23 51 3.7	50 3.3	9.31603	9.8526	4.65	5.15	20 1 24.8	355
21	19 27 37.25	27 53.77	23 33 29.7	32 25.3	9.28650	9.8754	4.70	5.09	21 1 25.6	356
22	19 32 4.83	32 20.11	23 15 5.1	13 57.6	9.25017	9.8934	4.76	4.99	22 1 26.1	357
23	19 36 8.58	36 22.34	22 56 0.1	54 50.5	9.20490	9.9068	4.81	4.85	23 1 26.2	358
24	19 39 45.37	39 57.37	22 36 25.9	35 15.3	9.14742	9.9153	4.86	4.59	24 1 25.8	359
25	19 42 51.84	43 1.82	22 16 35.4	15 25.0	9.07247	9.9185	4.91	+3.61	25 1 24.9	360
26	19 45 24.46	45 32.20	21 56 43.1	55 34.2	8.97033	9.9166	4.96	−4.51	26 1 23.5	361
27	19 47 19.61	47 24.93	21 37 4.4	35 58.4	8.82032	9.9086	5.00	4.86	27 1 21.5	362
28	19 48 33.74	48 36.54	21 17 55.9	16 54.2	8.56188	9.8939	5.03	5.05	28 1 18.7	363
29	19 49 3.60	49 3.88	20 59 33.9	58 37.9	+7.66836	9.8722	5.06	5.18	29 1 15.3	364
30	19 48 46.36	48 44.25	20 42 15.2	41 25.9	−8.46011	9.8424	5.07	5.28	30 1 11.0	365
31	19 47 40.06	47 35.83	20 26 14.9	25 33.0	8.80183	9.8037	5.08	5.35	31 1 5.9	366
32	19 45 43.84	45 37.92	−20 11 46.4	11 12.4	−8.99114	+9.7548	−5.07	−5.39	32 1 0.0	367

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
Jan. 1	15 34 27.60	33 51.91	−16 19 54.6	17 42.7	+9.27840	−9.8460	+3.56	+4.62	0 20 51.9	0
2	15 39 1.74	38 25.95	16 36 36.0	34 26.6	9.28083	9.8386	3.56	4.63	1 20 52.5	1
3	15 43 37.40	43 1.55	16 53 0.2	50 53.5	9.28323	9.8310	3.56	4.66	2 20 53.2	2
4	15 48 14.57	47 38.64	17 9 6.5	7 2.5	9.28558	9.8227	3.54	4.68	3 20 53.8	3
5	15 52 53.22	52 17.23	17 24 54.0	22 52.9	9.28782	9.8139	3.54	4.69	4 20 54.5	4
6	15 57 33.31	56 57.28	17 40 21.8	38 23.7	9.29008	9.8044	3.54	4.71	5 20 55.3	5
7	16 2 14.84	1 38.75	17 55 28.9	53 33.9	9.29224	9.7942	3.54	4.72	6 20 56.0	6
8	16 6 57.77	6 21.67	18 10 14.5	8 22.9	9.29442	9.7837	3.52	4.74	7 20 56.7	7
9	16 11 42.10	11 5.99	18 24 38.0	22 49.8	9.29651	9.7723	3.52	4.75	8 20 57.5	8
10	16 16 27.79	15 51.68	18 38 38.5	36 53.8	9.29857	9.7601	3.51	4.77	9 20 58.4	9
11	16 21 14.82	20 38.71	18 52 15.1	50 33.9	9.30061	9.7473	3.50	4.78	10 20 59.2	10
12	16 26 3.18	25 27.08	19 5 27.2	3 49.6	9.30257	9.7336	3.48	4.80	11 21 0.1	11
13	16 30 52.83	30 16.75	19 18 13.9	16 40.0	9.30447	9.7190	3.48	4.81	12 21 1.0	12
14	16 35 43.74	35 7.66	19 30 34.5	29 4.3	9.30637	9.7036	3.47	4.82	13 21 1.8	13
15	16 40 35.90	39 59.85	19 42 28.4	41 2.0	9.30818	9.6870	3.44	4.83	14 21 2.7	14
16	16 45 29.26	44 53.27	19 53 54.7	52 32.2	9.30993	9.6693	3.43	4.84	15 21 3.7	15
17	16 50 23.78	49 47.85	20 4 52.8	3 34.4	9.31161	9.6505	3.43	4.85	16 21 4.7	16
18	16 55 19.45	54 43.59	20 15 22.0	14 7.7	9.31333	9.6304	3.41	4.86	17 21 5.7	17
19	17 0 16.26	59 40.47	20 25 21.8	24 11.3	9.31495	9.6089	3.40	4.87	18 21 6.7	18
20	17 5 14.16	4 38.45	20 34 51.6	33 45.0	9.31650	9.5856	3.39	4.88	19 21 7.7	19
21	17 10 13.11	9 37.48	20 43 50.5	42 48.0	9.31802	9.5605	3.37	4.88	20 21 8.7	20
22	17 15 13.09	14 37.57	20 52 18.0	51 19.7	9.31950	9.5334	3.35	4.89	21 21 9.8	21
23	17 20 14.06	19 38.66	21 0 13.6	59 19.5	9.32086	9.5038	3.34	4.89	22 21 10.9	22
24	17 25 15.96	24 40.68	21 7 36.7	6 46.7	9.32218	9.4721	3.32	4.90	23 21 12.0	23
25	17 30 18.76	29 43.61	21 14 27.0	13 41.1	9.32346	9.4371	3.30	4.91	24 21 13.1	24
26	17 35 22.42	34 47.41	21 20 43.9	20 2.1	9.32461	9.3977	3.28	4.91	25 21 14.2	25
27	17 40 26.88	39 52.01	21 26 26.6	25 49.1	9.32577	9.3546	3.23	4.93	26 21 15.3	26
28	17 45 32.12	44 57.40	21 31 35.0	31 1.7	9.32685	9.3057	3.20	4.93	27 21 16.4	27
29	17 50 38.09	50 3.52	21 36 8.5	35 39.4	9.32783	9.2499	3.16	4.93	28 21 17.5	28
30	17 55 44.72	55 10.34	21 40 6.8	39 41.9	9.32874	9.1854	3.11	4.94	29 21 18.7	29
31	18 0 51.96	0 17.77	21 43 29.6	43 8.8	9.32953	9.1086	3.10	4.94	30 21 19.9	30
Feb. 1	18 5 59.75	5 25.75	21 46 16.5	45 59.9	9.33030	9.0148	3.04	4.94	31 21 21.1	31
2	18 11 8.06	10 34.26	21 48 27.4	48 14.9	9.33104	8.8947	2.93	4.95	32 21 22.3	32
3	18 16 16.84	15 43.26	21 50 2.0	49 53.5	9.33160	8.7242	2.86	4.95	33 21 23.5	33
4	18 21 25.99	20 52.63	21 50 59.8	50 55.4	9.33205	8.4360	2.81	4.95	34 21 24.7	34
5	18 26 35.44	26 2.31	21 51 20.6	51 20.2	9.33244	−7.1841	2.72	4.95	35 21 25.9	35
6	18 31 45.16	31 12.28	21 51 4.3	51 7.8	9.33282	+8.3857	2.59	4.95	36 21 27.2	36
7	18 36 55.11	36 22.47	21 50 10.7	50 18.1	9.33310	8.7002	2.27	4.95	37 21 28.4	37
8	18 42 5.22	41 32.82	21 48 39.9	48 51.1	9.33325	8.8811	+1.96	4.95	38 21 29.6	38
9	18 47 15.42	46 43.26	21 46 31.8	46 46.8	9.33335	9.0084		4.95	39 21 30.7	39
10	18 52 25.67	51 53.77	21 43 46.4	44 5.1	9.33339	9.1062	2.16	4.95	40 21 32.0	40
11	18 57 35.92	57 4.31	21 40 23.8	40 46.2	9.33335	9.1868	2.53	4.95	41 21 33.3	41
12	19 2 46.10	2 14.77	21 36 23.7	36 49.7	9.33317	9.2549	2.59	4.95	42 21 34.5	42
13	19 7 56.14	7 25.08	21 31 46.1	32 15.6	9.33296	9.3132	2.68	4.95	43 21 35.7	43
14	19 13 6.01	12 35.22	21 26 31.3	27 4.3	9.33271	9.3649	2.72	4.95	44 21 36.9	44
15	19 18 15.68	17 45.18	21 20 39.2	21 15.5	9.33242	9.4104	2.89	4.95	45 21 38.2	45
16	19 23 25.12	22 54.92	21 14 10.1	14 49.7	9.33203	9.4522	2.96	4.94	46 21 39.4	46
17	19 28 34.24	28 4.34	21 7 3.8	7 46.7	9.33149	9.4899	2.96	4.94	47 21 40.6	47
18	19 33 42.97	33 13.37	20 59 29.7	60 6.7	9.33097	9.5242	3.01	4.94	48 21 41.8	48
19	19 38 51.31	38 21.99	20 51 1.2	51 50.3	9.33040	9.5558	3.06	4.94	49 21 43.0	49
20	19 43 59.22	43 30.20	20 42 5.4	42 57.4	9.32975	9.5852	3.10	4.94	50 21 44.2	50
21	19 49 6.65	48 37.94	20 32 33.5	33 28.5	9.32903	9.6126	3.11	4.94	51 21 45.4	51
22	19 54 13.56	53 45.15	20 22 25.7	23 23.5	9.32831	9.6380	3.16	4.93	52 21 46.6	52
23	19 59 19.93	58 51.81	20 11 42.4	12 43.0	9.32748	9.6619	3.18	4.93	53 21 47.7	53
24	20 4 25.70	3 57.89	20 0 23.9	1 27.2	9.32659	9.6843	3.19	4.92	54 21 48.9	54
25	20 9 30.84	9 3.34	19 48 30.6	49 36.4	9.32571	9.7055	3.21	4.91	55 21 50.1	55
26	20 14 35.34	14 8.13	19 36 2.7	37 11.0	9.32476	9.7254	3.22	4.91	56 21 51.2	56
27	20 19 39.16	19 12.25	19 23 0.8	24 11.5	9.32378	9.7441	3.25	4.90	57 21 52.3	57
28	20 24 42.27	24 15.65	19 9 25.3	10 38.4	9.32272	9.7623	3.29	4.89	58 21 53.4	58
29	20 29 44.62	29 18.30	18 55 16.6	56 31.9	9.32159	9.7788	3.29	4.89	59 21 54.5	59
30	20 34 46.17	34 20.15	18 40 35.2	41 52.7	9.32041	9.7949	3.29	4.88	60 21 55.6	60
31	20 39 46.91	39 21.19	−18 25 21.5	26 41.1	+9.31928	+9.8100	−3.31	+4.87	61 21 56.7	61

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
Mar. 1	20 34 46.17	34 20.15	−18 40 35.2	41 52.7	+9.32041	+9.7949	−3.29	+4.88	60 21 55.6	60
2	20 39 46.91	39 21.19	18 25 21.5	26 41.1	9.31928	9.8100	3.31	4.87	61 21 56.7	61
3	20 44 46.85	44 21.41	18 9 36.2	10 57.7	9.31808	9.8244	3.33	4.86	62 21 57.7	62
4	20 49 45.94	49 20.80	17 53 19.7	54 43.1	9.31680	9.8382	3.33	4.86	63 21 58.8	63
5	20 54 44.15	54 19.32	17 36 32.6	37 57.8	9.31552	9.8513	3.33	4.85	64 21 59.9	64
6	20 59 41.48	59 16.92	17 19 15.3	20 42.3	9.31425	9.8639	3.35	4.83	65 22 0.9	65
7	21 4 37.92	4 13.64	17 1 28.4	2 57.2	9.31292	9.8756	3.36	4.83	66 22 1.9	66
8	21 9 33.44	9 9.45	16 43 12.9	44 43.1	9.31154	9.8871	3.36	4.82	67 22 2.9	67
9	21 14 28.02	14 4.31	16 24 28.7	26 0.4	9.31015	9.8981	3.36	4.81	68 22 3.9	68
10	21 19 21.66	18 58.23	16 5 16.8	6 49.9	9.30876	9.9082	3.36	4.81	69 22 4.9	69
11	21 24 14.36	23 51.18	15 45 37.9	47 12.4	9.30736	9.9181	3.36	4.80	70 22 5.8	70
12	21 29 6.12	28 43.20	15 25 32.5	27 8.3	9.30597	9.9276	3.36	4.80	71 22 6.7	71
13	21 33 56.94	33 34.28	15 5 1.1	6 38.1	9.30456	9.9366	3.36	4.78	72 22 7.6	72
14	21 38 46.82	38 24.41	14 44 4.5	45 42.7	9.30314	9.9452	3.35	4.76	73 22 8.5	73
15	21 43 35.76	43 13.60	14 22 43.2	24 22.5	9.30176	9.9535	3.36	4.75	74 22 9.4	74
16	21 48 23.77	48 1.85	14 0 57.9	2 38.2	9.30031	9.9613	3.34	4.73	75 22 10.2	75
17	21 53 10.84	52 49.14	13 38 49.3	40 30.7	9.29892	9.9689	3.33	4.72	76 22 11.0	76
18	21 57 57.00	57 35.53	13 16 17.9	18 0.2	9.29757	9.9761	3.33	4.71	77 22 11.8	77
19	22 02 42.27	2 21.03	12 53 24.4	55 7.5	9.29620	9.9829	3.32	4.70	78 22 12.6	78
20	22 7 26.65	7 5.63	12 30 9.6	31 53.4	9.29485	9.9895	3.31	4.69	79 22 13.4	79
21	22 12 10.16	11 49.36	12 6 33.9	8 18.6	9.29355	9.9959	3.30	4.67	80 22 14.2	80
22	22 16 52.83	16 32.25	11 42 37.9	44 23.4	9.29226	0.0018	3.29	4.65	81 22 15.0	81
23	22 21 34.67	21 14.29	11 18 22.5	20 8.6	9.29100	0.0075	3.28	4.64	82 22 15.7	82
24	22 26 15.70	25 55.53	10 53 48.4	55 35.0	9.28977	0.0130	3.26	4.62	83 22 16.5	83
25	22 30 55.95	30 35.97	10 28 56.1	30 43.3	9.28855	0.0185	3.23	4.60	84 22 17.2	84
26	22 35 35.43	35 15.64	10 3 46.3	5 34.0	9.28742	0.0231	3.23	4.59	85 22 17.9	85
27	22 40 14.18	39 54.58	9 38 19.7	40 7.8	9.28626	0.0278	3.22	4.56	86 22 18.6	86
28	22 44 52.20	44 32.78	9 12 37.0	14 25.4	9.28514	0.0322	3.20	4.54	87 22 19.3	87
29	22 49 29.52	49 10.29	8 46 39.0	48 27.7	9.28407	0.0363	3.18	4.53	88 22 20.0	88
30	22 54 6.18	53 47.12	8 20 26.3	22 15.3	9.28308	0.0404	3.18	4.50	89 22 20.7	89
31	22 58 42.21	58 23.33	7 53 59.4	55 48.7	9.28206	0.0441	3.14	4.47	90 22 21.4	90
Apr. 1	23 3 17.61	2 58.89	7 27 19.3	29 8.6	9.28111	0.0476	3.13	4.46	91 22 22.0	91
2	23 7 52.42	7 33.85	7 0 26.7	2 16.0	9.28020	0.0509	3.10	4.44	92 22 22.6	92
3	23 12 26.67	12 8.25	6 33 22.0	35 11.6	9.27934	0.0541	3.08	4.41	93 22 23.2	93
4	23 17 0.39	16 42.12	6 6 5.9	7 55.7	9.27852	0.0570	3.04	4.36	94 22 23.8	94
5	23 21 33.61	21 15.49	5 38 39.3	40 29.0	9.27779	0.0596	3.04	4.34	95 22 24.4	95
6	23 26 6.37	25 48.41	5 11 3.0	12 52.5	9.27702	0.0621	3.01	4.30	96 22 25.1	96
7	23 30 38.67	30 20.85	4 43 17.6	45 6.9	9.27632	0.0643	2.96	4.27	97 22 25.7	97
8	23 35 10.55	34 52.87	4 15 23.9	17 13.0	9.27567	0.0664	2.89	4.23	98 22 26.3	98
9	23 39 42.05	39 24.51	3 47 22.4	49 11.4	9.27514	0.0684	2.86	4.17	99 22 26.9	99
10	23 44 13.23	43 55.82	3 19 13.6	21 2.5	9.27463	0.0702	2.83	4.11	100 22 27.5	100
11	23 48 44.10	48 26.80	2 50 58.4	52 47.0	9.27413	0.0716	2.76	4.10	101 22 28.0	101
12	23 53 14.68	52 57.52	2 22 37.7	24 25.8	9.27366	0.0730	2.59	4.03	102 22 28.6	102
13	23 57 45.01	57 27.97	1 54 11.8	55 59.6	9.27334	0.0743	2.53	3.91	103 22 29.2	103
14	0 2 15.15	1 58.23	1 25 41.4	27 28.8	9.27308	0.0753	2.46	3.86	104 22 29.8	105
15	0 6 45.14	6 28.33	0 57 7.5	58 54.4	9.27284	0.0761	2.29	3.72	105 22 30.3	106
16	0 11 15.00	10 58.29	− 0 28 30.6	30 17.1	9.27268	0.0768	1.99	3.53	106 22 30.8	107
17	0 15 44.78	15 28.18	+ 0 0 8.6	1 37.4	9.27257	0.0772	−1.68	3.37	107 22 31.4	108
18	0 20 14.51	19 58.01	0 28 49.3	27 4.0	9.27254	0.0776	+1.68	+2.99	108 22 31.9	109
19	0 24 44.23	24 27.82	0 57 31.0	55 46.3	9.27254	0.0778	2.29	−2.68	109 22 32.4	110
20	0 29 13.98	28 57.68	1 26 13.2	24 29.1	9.27263	0.0778	2.53	3.37	110 22 33.0	111
21	0 33 43.82	33 27.63	1 54 55.2	53 11.8	9.27281	0.0777	2.53	3.64	111 22 33.6	112
22	0 38 13.77	37 57.69	2 23 36.2	21 53.7	9.27302	0.0773	2.64	3.76	112 22 34.2	113
23	0 42 43.87	42 27.88	2 52 15.4	50 33.9	9.27329	0.0767	2.68	3.86	113 22 34.7	114
24	0 47 14.15	46 58.25	3 20 52.2	19 11.5	9.27357	0.0760	2.83	3.91	114 22 35.3	115
25	0 51 44.64	51 28.83	3 49 25.9	47 45.9	9.27398	0.0753	2.91	4.03	115 22 35.8	116
26	0 56 15.42	55 59.71	4 17 56.1	16 16.9	9.27451	0.0742	2.96	4.09	116 22 36.4	117
27	1 0 46.55	0 30.92	4 46 21.9	44 43.7	9.27512	0.0730	2.96	4.16	117 22 37.0	118
28	1 5 18.06	5 2.51	5 14 42.4	13 5.3	9.27571	0.0715	2.99	4.19	118 22 37.6	119
29	1 9 49.95	9 34.48	5 42 56.9	41 20.9	9.27630	0.0699	3.04	4.22	119 22 38.1	120
30	1 14 22.24	14 6.86	6 11 5.0	9 20.9	9.27702	0.0686	3.06	4.29	120 22 38.7	121
31	1 18 54.99	18 39.69	+ 6 39 6.0	37 31.9	+9.27777	+0.0663	+3.10	−4.33	121 22 39.3	122

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
May 1	1 18 54.99	18 39.69	+ 6 39 6.0	37 31.9	+9.27777	+0.0663	+3.10	−4.33	121 22 39.3	122
2	1 23 28.23	23 13.02	7 6 59.0	5 26.2	9.27860	0.0641	3.11	4.36	122 22 39.9	123
3	1 28 2.00	27 46.89	7 34 43.2	33 11.7	9.27942	0.0617	3.16	4.37	123 22 40.6	124
4	1 32 36.32	32 21.29	8 2 18.0	0 47.7	9.28036	0.0592	3.18	4.41	124 22 41.2	125
5	1 37 11.24	36 56.29	8 29 42.9	28 13.8	9.28130	0.0565	3.20	4.45	125 22 41.8	126
6	1 41 46.78	41 31.93	8 56 57.0	55 29.3	9.28231	0.0535	3.22	4.47	126 22 42.5	127
7	1 46 22.98	46 8.23	9 23 59.4	22 33.2	9.28341	0.0502	3.22	4.48	127 22 43.2	128
8	1 50 59.88	50 45.23	9 50 49.4	49 24.7	9.28450	0.0468	3.25	4.51	128 22 43.9	129
9	1 55 37.49	55 22.93	10 17 26.7	16 3.3	9.28565	0.0433	3.26	4.53	129 22 44.6	130
10	2 0 15.85	0 1.39	10 43 50.6	42 28.6	9.28682	0.0395	3.29	4.56	130 22 45.3	131
11	2 4 54.98	4 40.60	11 10 0.2	8 39.8	9.28805	0.0354	3.31	4.58	131 22 45.9	132
12	2 9 34.92	9 20.63	11 35 54.6	34 35.9	9.28934	0.0311	3.32	4.59	132 22 46.6	133
13	2 14 15.70	14 1.50	12 1 33.2	0 16.0	9.29064	0.0266	3.34	4.63	133 22 47.3	134
14	2 18 57.34	18 43.24	12 26 55.4	25 39.7	9.29201	0.0217	3.35	4.64	134 22 48.0	135
15	2 23 39.88	23 25.91	12 52 0.3	50 46.4	9.29344	0.0166	3.35	4.65	135 22 48.9	136
16	2 28 23.35	28 9.49	13 16 47.1	15 35.0	9.29484	0.0113	3.36	4.67	136 22 49.7	137
17	2 33 7.75	32 54.00	13 41 15.2	40 4.8	9.29626	0.0056	3.39	4.68	137 22 50.5	138
18	2 37 53.11	37 39.47	14 5 23.9	4 15.2	9.29779	9.9998	3.39	4.69	138 22 51.3	139
19	2 42 39.48	42 25.95	14 29 12.8	28 5.9	9.29933	9.9936	3.41	4.71	139 22 52.1	140
20	2 47 26.87	47 13.47	14 52 41.1	51 36.1	9.30090	9.9872	3.41	4.73	140 22 53.0	141
21	2 52 15.30	52 2.04	15 15 47.9	14 44.7	9.30246	9.9802	3.41	4.74	141 22 53.9	142
22	2 57 4.78	56 51.65	15 38 32.3	37 31.0	9.30402	9.9730	3.42	4.75	142 22 54.8	143
23	3 1 55.32	1 42.32	16 0 53.7	59 54.3	9.30568	9.9655	3.42	4.76	143 22 55.7	144
24	3 6 46.97	6 34.10	16 22 51.5	21 54.0	9.30734	9.9576	3.42	4.78	144 22 56.6	145
25	3 11 39.73	11 27.00	16 44 25.1	43 29.5	9.30898	9.9493	3.42	4.79	145 22 57.5	146
26	3 16 33.60	16 21.01	17 5 33.6	4 39.9	9.31059	9.9406	3.43	4.80	146 22 58.4	147
27	3 21 28.57	21 16.15	17 26 16.3	25 24.6	9.31227	9.9314	3.42	4.81	147 22 59.4	148
28	3 26 24.67	26 12.39	17 46 32.4	45 42.6	9.31387	9.9219	3.43	4.82	148 23 0.4	149
29	3 31 21.88	31 9.76	18 6 21.4	5 33.6	9.31556	9.9118	3.43	4.83	149 23 1.4	150
30	3 36 20.24	36 8.28	18 25 42.5	24 56.7	9.31721	9.9012	3.43	4.85	150 23 2.4	151
31	3 41 19.73	41 7.96	18 44 34.9	43 51.0	9.31886	9.8901	3.42	4.85	151 23 3.5	152
June 1	3 46 20.35	46 8.74	19 2 58.0	2 16.0	9.32047	9.8785	3.42	4.87	152 23 4.5	153
2	3 51 22.08	51 10.66	19 20 51.3	20 11.3	9.32205	9.8663	3.43	4.87	153 23 5.6	154
3	3 56 24.92	56 13.69	19 38 14.0	37 36.0	9.32368	9.8533	3.42	4.88	154 23 6.7	155
4	4 1 28.89	1 17.85	19 55 5.4	54 29.3	9.32528	9.8398	3.41	4.89	155 23 7.8	156
5	4 6 33.96	6 23.13	20 11 25.0	10 50.8	9.32682	9.8256	3.40	4.90	156 23 9.0	157
6	4 11 40.10	11 29.49	20 27 12.2	26 40.0	9.32830	9.8106	3.40	4.91	157 23 10.2	158
7	4 16 47.28	16 36.90	20 42 26.2	41 55.9	9.32981	9.7946	3.37	4.92	158 23 11.4	159
8	4 21 55.50	21 45.35	20 57 6.2	56 37.9	9.33120	9.7776	3.37	4.92	159 23 12.7	160
9	4 27 4.71	26 54.79	21 11 11.6	10 45.2	9.33262	9.7598	3.35	4.94	160 23 13.9	161
10	4 32 14.90	32 5.21	21 24 42.2	24 17.5	9.33393	9.7411	3.35	4.94	161 23 15.1	162
11	4 37 26.02	37 16.56	21 37 37.4	37 14.4	9.33522	9.7209	3.35	4.94	162 23 16.3	163
12	4 42 38.07	42 28.87	21 49 56.4	49 35.2	9.33652	9.6995	3.34	4.95	163 23 17.6	164
13	4 47 51.04	47 42.08	22 1 38.9	1 19.4	9.33781	9.6770	3.31	4.96	164 23 18.8	165
14	4 53 4.91	52 56.20	22 12 44.5	12 26.6	9.33901	9.6525	3.28	4.96	165 23 20.1	166
15	4 58 19.62	58 11.17	22 23 12.4	22 56.1	9.34012	9.6263	3.25	4.96	166 23 21.4	167
16	5 3 35.11	3 26.93	22 33 2.2	32 47.4	9.34116	9.5981	3.23	4.97	167 23 22.7	168
17	5 8 51.34	8 43.45	22 42 13.6	42 0.3	9.34219	9.5676	3.21	4.97	168 23 24.1	169
18	5 14 8.30	14 0.69	22 50 46.1	50 34.3	9.34311	9.5346	3.20	4.98	169 23 25.4	170
19	5 19 25.94	19 18.61	22 58 39.3	58 28.9	9.34405	9.4981	3.16	4.99	170 23 26.8	171
20	5 24 44.23	24 37.17	23 5 52.7	5 43.5	9.34494	9.4581	3.10	4.99	171 23 28.1	172
21	5 30 3.13	29 56.35	23 12 26.0	12 18.1	9.34570	9.4135	3.04	4.99	172 23 29.5	173
22	5 35 22.56	35 16.10	23 18 18.8	18 12.1	9.34636	9.3634	3.03	5.00	173 23 30.9	174
23	5 40 42.46	40 36.32	23 23 30.9	23 25.3	9.34698	9.3069	2.99	5.00	174 23 32.3	175
24	5 46 2.80	45 56.95	23 28 2.2	27 57.5	9.34756	9.2410	2.91	5.00	175 23 33.7	176
25	5 51 23.54	51 17.97	23 31 52.3	31 48.6	9.34806	9.1626	2.86	5.01	176 23 35.0	177
26	5 56 44.63	56 39.36	23 35 0.9	34 58.1	9.34851	9.0667	2.76	5.01	177 23 36.4	178
27	6 2 6.02	2 1.06	23 37 27.9	37 25.9	9.34889	8.9420	2.53	5.01	178 23 37.8	179
28	6 7 27.66	7 23.01	23 39 13.0	39 11.8	9.34915	8.7670	2.38	5.01	179 23 39.2	180
29	6 12 49.45	12 45.11	23 40 16.3	40 15.7	9.34932	8.4690	+1.99	5.01	180 23 40.6	181
30	6 18 11.34	18 7.34	23 40 37.7	40 37.7	9.34941	+6.3188	−1.38	5.01	181 23 42.1	182
31	6 23 33.28	23 29.59	+23 40 17.0	40 17.5	+9.34944	−8.4628	−2.16	−5.00	182 23 43.5	183

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
July 1	6 23 33.28	23 29.59	+23 40 17.0	40 17.5	+9.34944	−8.4628	−2.16	−5.00	182 23 43.5	183
2	6 28 55.21	28 51.83	23 39 14.2	39 15.1	9.34939	8.7659	2.46	5.00	183 23 44.9	184
3	6 34 17.07	34 14.01	23 37 29.3	37 30.5	9.34927	8.9413	2.64	5.01	184 23 46.3	185
4	6 39 38.81	39 36.06	23 35 2.5	35 3.9	9.34906	9.0667	2.76	5.01	185 23 47.7	186
5	6 45 0.37	44 57.94	23 31 53.6	31 55.2	9.34877	9.1643	2.86	5.00	186 23 49.2	187
6	6 50 21.68	50 19.58	23 28 2.6	28 4.3	9.34840	9.2427	2.93	5.00	187 23 50.6	188
7	6 55 42.69	55 40.91	23 23 30.0	23 31.5	9.34794	9.3091	2.99	5.00	188 23 52.0	189
8	7 1 3.34	1 1.87	23 18 15.8	18 17.2	9.34741	9.3669	3.03	5.00	189 23 53.4	190
9	7 6 23.58	6 22.43	23 12 20.0	12 21.4	9.34684	9.4176	3.08	5.00	190 23 54.8	191
10	7 11 43.37	11 42.53	23 5 42.9	5 44.1	9.34621	9.4624	3.13	4.99	191 23 56.2	192
11	7 17 2.66	17 2.13	22 58 25.0	58 25.8	9.34550	9.5030	3.19	4.99	192 23 57.6	193
12	7 22 21.39	22 21.17	22 50 26.4	50 26.7	9.34465	9.5397	3.21	4.99	193 23 59.0	194
13	7 27 39.48	27 39.57	22 41 47.5	41 47.4	9.34374	9.5733	3.23	4.98	195 0 0.4	195
14	7 32 56.88	32 57.25	22 32 28.5	32 27.8	9.34277	9.6045	3.26	4.98	196 0 1.7	196
15	7 38 13.55	38 14.21	22 22 29.6	22 28.3	9.34174	9.6331	3.28	4.97	197 0 3.0	197
16	7 43 29.46	43 30.40	22 11 51.4	11 49.4	9.34069	9.6599	3.31	4.96	198 0 4.3	198
17	7 48 44.58	48 45.82	22 0 34.0	0 31.3	9.33954	9.6849	3.31	4.96	199 0 5.7	199
18	7 53 58.86	54 0.39	21 48 37.9	48 34.4	9.33840	9.7082	3.33	4.96	200 0 7.0	200
19	7 59 12.30	59 14.10	21 36 3.7	35 59.2	9.33721	9.7299	3.35	4.95	201 0 8.3	201
20	8 4 24.86	4 26.90	21 22 51.9	22 46.5	9.33593	9.7506	3.36	4.95	202 0 9.5	202
21	8 9 36.49	9 38.80	21 9 2.7	8 56.4	9.33464	9.7701	3.37	4.94	203 0 10.8	203
22	8 14 47.17	14 49.73	20 54 36.6	54 29.3	9.33327	9.7883	3.37	4.93	204 0 12.0	204
23	8 19 56.87	19 59.68	20 39 34.5	39 26.1	9.33192	9.8054	3.40	4.93	205 0 13.1	205
24	8 25 5.58	25 8.64	20 23 56.9	23 47.4	9.33044	9.8219	3.40	4.92	206 0 14.3	206
25	8 30 13.24	30 16.55	20 7 44.1	7 33.4	9.32899	9.8375	3.41	4.91	207 0 15.5	207
26	8 35 19.86	35 23.39	19 50 56.6	50 44.8	9.32749	9.8522	3.41	4.90	208 0 16.6	208
27	8 40 25.41	40 29.16	19 33 35.2	33 22.2	9.32595	9.8663	3.42	4.90	209 0 17.7	209
28	8 45 29.87	45 33.86	19 15 40.3	15 26.0	9.32439	9.8798	3.43	4.88	210 0 18.9	210
29	8 50 33.23	50 37.46	18 57 12.5	56 56.8	9.32277	9.8924	3.41	4.88	211 0 20.1	211
30	8 55 35.47	55 39.93	18 38 12.7	37 55.5	9.32120	9.9046	3.41	4.87	212 0 21.3	212
31	9 0 36.62	0 41.30	18 18 41.4	18 22.9	9.31967	9.9160	3.44	4.86	213 0 22.4	213
Aug. 1	9 5 36.68	5 41.57	17 58 39.5	58 19.6	9.31802	9.9271	3.45	4.85	214 0 23.5	214
2	9 10 35.59	10 40.67	17 38 7.4	37 46.2	9.31629	9.9376	3.43	4.84	215 0 24.5	215
3	9 15 33.33	15 38.60	17 17 5.9	16 43.3	9.31465	9.9475	3.43	4.82	216 0 25.5	216
4	9 20 29.94	20 35.39	16 55 35.7	55 11.7	9.31298	9.9572	3.42	4.81	217 0 26.5	217
5	9 25 25.42	25 31.04	16 33 37.3	33 12.0	9.31138	9.9662	3.41	4.80	218 0 27.4	218
6	9 30 19.79	30 25.59	16 11 11.7	10 44.9	9.30978	9.9749	3.45	4.80	219 0 28.4	219
7	9 35 13.07	35 19.04	15 48 19.5	47 51.2	9.30808	9.9833	3.43	4.78	220 0 29.4	220
8	9 40 5.23	40 11.37	15 25 1.2	24 31.5	9.30640	9.9914	3.43	4.76	221 0 30.3	221
9	9 44 56.25	45 2.54	15 1 17.5	0 46.4	9.30467	9.9988	3.41	4.76	222 0 31.2	222
10	9 49 46.14	49 52.59	14 37 9.5	36 36.9	9.30306	0.0061	3.40	4.74	223 0 32.1	223
11	9 54 34.97	54 41.57	14 12 37.6	12 3.6	9.30148	0.0130	3.41	4.73	224 0 33.0	224
12	9 59 22.75	59 29.50	13 47 42.7	47 7.2	9.29990	0.0196	3.40	4.72	225 0 33.9	225
13	10 4 9.49	4 16.39	13 22 25.5	21 48.8	9.29834	0.0259	3.39	4.70	226 0 34.7	226
14	10 8 55.21	9 2.24	12 56 46.6	56 8.5	9.29677	0.0319	3.36	4.69	227 0 35.5	227
15	10 13 39.92	13 47.08	12 30 46.8	30 7.3	9.29528	0.0376	3.36	4.68	228 0 36.3	228
16	10 18 23.66	18 30.96	12 4 26.8	3 45.9	9.29379	0.0431	3.34	4.65	229 0 37.1	229
17	10 23 6.45	23 13.88	11 37 47.4	37 5.1	9.29239	0.0482	3.34	4.64	230 0 37.9	230
18	10 27 48.33	27 55.87	11 10 49.3	10 5.7	9.29099	0.0532	3.32	4.62	231 0 38.6	231
19	10 32 29.31	32 36.97	10 43 33.0	42 48.2	9.28963	0.0579	3.31	4.60	232 0 39.2	232
20	10 37 9.43	37 17.18	10 15 59.4	15 13.3	9.28829	0.0623	3.26	4.59	233 0 39.9	233
21	10 41 48.70	41 56.58	9 48 9.4	47 21.9	9.28706	0.0665	3.26	4.56	234 0 40.7	234
22	10 46 27.20	46 35.22	9 20 3.5	19 14.7	9.28590	0.0705	3.23	4.54	235 0 41.5	235
23	10 51 4.94	51 13.07	8 51 42.3	50 52.3	9.28470	0.0744	3.22	4.51	236 0 42.1	236
24	10 55 41.96	55 50.18	8 23 6.5	22 15.3	9.28356	0.0780	3.19	4.48	237 0 42.8	237
25	11 0 18.28	0 26.62	7 54 17.0	53 24.6	9.28253	0.0812	3.18	4.46	238 0 43.5	238
26	11 4 53.96	5 2.39	7 25 14.8	24 21.2	9.28151	0.0843	3.14	4.46	239 0 44.1	239
27	11 9 29.01	9 37.54	6 56 0.6	55 5.8	9.28055	0.0873	3.11	4.42	240 0 44.7	240
28	11 14 3.47	14 12.11	6 26 34.7	25 38.8	9.27964	0.0901	3.08	4.38	241 0 45.4	241
29	11 18 37.38	18 46.12	5 56 57.9	56 1.0	9.27879	0.0926	3.03	4.34	242 0 46.0	242
30	11 23 10.78	23 19.62	5 27 11.2	26 13.2	9.27804	0.0949	3.03	4.31	243 0 46.6	243
31	11 27 43.73	27 52.67	+ 4 57 15.4	56 16.4	+9.27733	−0.0970	−2.99	−4.29	244 0 47.2	244

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
Sept 1	11 32 16.23	32 25.27	+ 4 27 11.1	26 11.1	+9.27664	−0.0990	−2.93	−4.22	245 0 47.8	245
2	11 36 48.32	36 57.46	3 56 58.8	55 57.8	9.27602	0.1008	2.86	4.16	246 0 48.4	246
3	11 41 20.05	41 29.29	3 26 39.5	25 37.5	9.27551	0.1024	2.83	4.11	247 0 49.0	247
4	11 45 51.47	46 0.81	2 56 13.9	55 10.9	9.27504	0.1038	2.81	4.08	248 0 49.6	248
5	11 50 22.61	50 32.06	2 25 42.8	24 38.9	9.27459	0.1050	2.64	4.00	249 0 50.2	249
6	11 54 53.49	55 3.04	1 55 6.8	54 2.0	9.27422	0.1061	2.53	3.91	250 0 50.8	250
7	11 59 24.18	59 33.82	1 24 26.6	23 21.0	9.27397	0.1070	2.46	3.78	251 0 51.3	251
8	12 3 54.72	4 4.47	0 53 43.0	52 36.6	9.27371	0.1077	2.16	3.68	252 0 51.9	252
9	12 8 25.13	8 34.97	+ 0 22 56.7	21 49.5	9.27357	0.1083	−1.68	3.37	253 0 52.4	253
10	12 12 55.47	13 5.40	− 0 7 51.6	8 59.5	9.27349	0.1086	+1.38	−2.99	254 0 52.9	254
11	12 17 25.78	17 35.82	0 38 41.0	39 49.7	9.27349	0.1088	1.99	+2.68	255 0 53.5	255
12	12 21 56.10	22 6.26	1 9 30.8	10 40.3	9.27350	0.1088	2.38	3.29	256 0 54.1	256
13	12 26 26.46	26 36.73	1 40 20.4	41 30.7	9.27365	0.1087	2.46	3.59	257 0 54.7	257
14	12 30 56.92	31 7.31	2 11 9.2	12 20.2	9.27381	0.1084	2.64	3.76	258 0 55.3	258
15	12 35 27.51	35 38.02	2 41 56.3	43 8.0	9.27406	0.1079	2.76	3.86	259 0 55.9	259
16	12 39 58.29	40 8.91	3 12 40.9	13 53.2	9.27443	0.1073	2.83	3.99	260 0 56.5	260
17	12 44 29.32	44 40.05	3 43 22.4	44 35.2	9.27487	0.1064	2.86	4.03	261 0 57.0	261
18	12 49 0.63	49 11.49	4 14 0.0	15 13.4	9.27534	0.1054	2.93	4.09	262 0 57.6	262
19	12 53 32.24	53 43.21	4 44 33.1	45 47.0	9.27583	0.1043	3.01	4.16	263 0 58.1	263
20	12 58 4.21	58 15.29	5 15 0.9	16 15.2	9.27650	0.1029	3.03	4.19	264 0 58.6	264
21	13 2 36.61	2 47.82	5 45 22.5	46 37.3	9.27719	0.1014	3.08	4.23	265 0 59.2	265
22	13 7 9.46	7 20.82	6 15 37.4	16 52.8	9.27793	0.0997	3.11	4.30	266 0 59.9	266
23	13 11 42.81	11 54.31	6 45 45.0	47 0.8	9.27879	0.0979	3.13	4.35	267 1 0.5	267
24	13 16 16.71	16 28.34	7 15 44.3	17 0.5	9.27968	0.0957	3.14	4.37	268 1 1.1	268
25	13 20 51.18	21 2.95	7 45 34.4	46 51.0	9.28058	0.0934	3.20	4.41	269 1 1.7	269
26	13 25 26.24	25 38.16	8 15 14.6	16 31.7	9.28160	0.0909	3.23	4.44	270 1 2.3	270
27	13 30 1.96	30 14.04	8 44 44.2	46 1.6	9.28267	0.0882	3.22	4.46	271 1 3.0	271
28	13 34 38.40	34 50.64	9 14 2.6	15 20.1	9.28376	0.0854	3.26	4.49	272 1 3.7	272
29	13 39 15.55	39 27.96	9 43 9.2	44 27.0	9.28492	0.0823	3.29	4.53	273 1 4.4	273
30	13 43 53.46	44 6.04	10 12 2.9	13 21.0	9.28615	0.0790	3.31	4.54	274 1 5.1	274
Oct. 1	13 48 32.18	48 44.94	10 40 42.8	42 1.2	9.28745	0.0754	3.32	4.56	275 1 5.8	275
2	13 53 11.74	53 24.67	11 9 8.3	10 26.8	9.28877	0.0717	3.34	4.59	276 1 6.5	276
3	13 57 52.17	58 5.31	11 37 18.6	38 37.3	9.29015	0.0677	3.35	4.60	277 1 7.3	277
4	14 2 33.50	2 46.83	12 5 12.9	6 31.7	9.29155	0.0634	3.36	4.62	278 1 8.1	278
5	14 7 15.76	7 29.29	12 32 50.4	34 9.3	9.29301	0.0589	3.37	4.64	279 1 8.9	279
6	14 11 58.98	12 12.69	13 0 10.3	1 29.1	9.29453	0.0541	3.37	4.66	280 1 9.6	280
7	14 16 43.19	16 57.11	13 27 11.7	28 30.5	9.29600	0.0491	3.40	4.68	281 1 10.4	281
8	14 21 28.39	21 42.52	13 53 54.0	55 12.8	9.29757	0.0438	3.41	4.70	282 1 11.2	282
9	14 26 14.63	26 28.97	14 20 16.4	21 35.0	9.29917	0.0383	3.41	4.71	283 1 12.0	283
10	14 31 1.94	31 16.49	14 46 18.2	47 36.6	9.30082	0.0323	3.41	4.72	284 1 12.8	284
11	14 35 50.34	36 5.13	15 11 58.4	13 16.7	9.30242	0.0262	3.43	4.74	285 1 13.7	285
12	14 40 39.83	40 54.86	15 37 16.3	38 34.4	9.30413	0.0196	3.43	4.76	286 1 14.6	286
13	14 45 30.46	45 45.72	16 2 11.0	3 28.8	9.30582	0.0128	3.44	4.77	287 1 15.5	287
14	14 50 22.23	50 37.74	16 26 41.9	27 59.3	9.30756	0.0057	3.47	4.78	288 1 16.4	288
15	14 55 15.17	55 30.93	16 50 48.3	52 5.3	9.30935	9.9982	3.45	4.80	289 1 17.3	289
16	15 0 9.33	0 25.36	17 14 29.2	15 45.8	9.31109	9.9903	3.46	4.81	290 1 18.3	290
17	15 5 4.68	5 20.98	17 37 43.8	38 59.9	9.31287	9.9820	3.46	4.82	291 1 19.3	291
18	15 10 1.24	10 17.81	18 0 31.3	1 46.8	9.31462	9.9732	3.47	4.83	292 1 20.3	292
19	15 14 59.00	15 15.84	18 22 50.9	24 5.7	9.31635	9.9641	3.49	4.84	293 1 21.3	293
20	15 19 57.98	20 15.11	18 44 42.1	45 56.2	9.31823	9.9546	3.48	4.85	294 1 22.3	294
21	15 24 58.24	25 15.67	19 6 4.2	7 17.6	9.32011	9.9447	3.46	4.87	295 1 23.4	295
22	15 29 59.77	30 17.50	19 26 56.4	28 8.9	9.32183	9.9340	3.47	4.88	296 1 24.5	296
23	15 35 2.51	35 20.54	19 47 17.6	48 29.2	9.32357	9.9228	3.47	4.89	297 1 25.6	297
24	15 40 6.47	40 24.81	20 7 6.9	8 17.6	9.32536	9.9111	3.47	4.90	298 1 26.7	298
25	15 45 11.67	45 30.32	20 26 23.9	27 33.5	9.32708	9.8989	3.47	4.91	299 1 27.8	299
26	15 50 18.09	50 37.07	20 45 7.9	46 16.3	9.32888	9.8859	3.47	4.92	300 1 29.0	300
27	15 55 25.77	55 45.08	21 3 18.0	4 25.2	9.33060	9.8723	3.45	4.93	301 1 30.2	301
28	16 0 34.65	0 54.29	21 20 53.7	21 59.6	9.33227	9.8581	3.43	4.94	302 1 31.4	302
29	16 5 44.69	6 4.67	21 37 54.3	38 58.8	9.33387	9.8430	3.43	4.95	303 1 32.6	303
30	16 10 55.88	11 16.21	21 54 19.1	55 22.1	9.33552	9.8270	3.41	4.95	304 1 33.9	304
31	16 16 8.21	16 28.90	22 10 7.3	11 8.8	9.33702	9.8101	3.40	4.96	305 1 35.2	305
32	16 21 21.61	21 42.65	−22 25 18.2	26 18.0	+9.33849	−9.7920	+3.39	+4.96	306 1 36.5	306

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h m s	m s	° ′ ″	′ ″					d h m	d
Nov. 1	16 21 21.61	21 42.65	−22 25 18.2	26 18.0	+9.33849	−9.7920	+3.39	+4.96	306 1 36.5	306
2	16 26 36.06	26 57.45	22 39 51.0	40 49.0	9.33992	9.7731	3.38	4.97	307 1 37.8	307
3	16 31 51.54	32 13.29	22 53 45.4	54 41.4	9.34134	9.7528	3.36	4.98	308 1 39.1	308
4	16 37 8.03	37 30.13	23 7 0.7	7 54.8	9.34271	9.7315	3.34	4.99	309 1 40.4	309
5	16 42 25.49	42 47.95	23 19 36.5	20 28.4	9.34399	9.7084	3.31	4.99	310 1 41.7	310
6	16 47 43.85	48 6.68	23 31 32.0	32 21.7	9.34517	9.6839	3.29	5.00	311 1 43.1	311
7	16 53 3.06	53 26.26	23 42 46.8	43 34.2	9.34630	9.6575	3.26	5.01	312 1 44.5	312
8	16 58 23.08	58 46.65	23 53 20.3	54 5.3	9.34736	9.6289	3.23	5.01	313 1 45.9	313
9	17 3 43.86	4 7.79	24 3 12.0	3 54.4	9.34838	9.5982	3.20	5.01	314 1 47.3	314
10	17 9 5.36	9 29.66	24 12 21.6	13 1.4	9.34931	9.5646	3.16	5.02	315 1 48.7	315
11	17 14 27.52	14 52.18	24 20 48.6	21 25.7	9.35016	9.5281	3.11	5.02	316 1 50.1	316
12	17 19 50.28	20 15.30	24 28 32.7	29 6.9	9.35092	9.4877	3.06	5.03	317 1 51.5	317
13	17 25 13.58	25 38.97	24 35 33.4	36 4.6	9.35161	9.4424	3.01	5.03	318 1 53.0	318
14	17 30 37.36	31 3.13	24 41 50.3	42 18.5	9.35221	9.3922	2.93	5.03	319 1 54.5	319
15	17 36 1.56	36 27.68	24 47 23.4	47 48.3	9.35273	9.3344	2.86	5.03	320 1 55.9	320
16	17 41 26.12	41 52.60	24 52 12.1	52 33.7	9.35316	9.2672	2.81	5.03	321 1 57.4	321
17	17 46 50.98	47 17.82	24 56 16.2	56 34.3	9.35356	9.1876	2.59	5.04	322 1 58.9	322
18	17 52 16.10	52 43.30	24 59 35.6	59 50.2	9.35385	9.0899	2.29	5.04	323 2 0.4	323
19	17 57 41.40	58 8.96	25 2 10.2	2 21.2	9.35400	8.9622	+1.99	5.04	324 2 1.9	324
20	18 3 6.80	3 34.69	25 3 59.7	4 7.0	9.35411	8.7817	−1.68	5.04	325 2 3.4	325
21	18 8 32.23	9 0.46	25 5 4.2	5 7.6	9.35414	−8.4628	2.38	5.04	326 2 4.9	326
22	18 13 57.64	14 26.20	25 5 23.4	5 22.9	9.35404	+7.3602	2.59	5.04	327 2 6.4	327
23	18 19 22.95	19 51.84	25 4 57.3	4 52.8	9.35387	8.5274	2.72	5.04	328 2 7.9	328
24	18 24 48.10	25 17.31	25 3 46.2	3 37.6	9.35363	8.8143	2.89	5.04	329 2 9.4	329
25	18 30 13.02	30 42.52	25 1 49.8	1 36.9	9.35324	8.9857	2.96	5.04	330 2 10.8	330
26	18 35 37.62	36 7.41	24 59 8.4	58 51.3	9.35276	9.1072	3.03	5.04	331 2 12.2	331
27	18 41 1.83	41 31.87	24 55 42.1	55 20.7	9.35221	9.2011	3.10	5.04	332 2 13.5	332
28	18 46 25.59	46 55.90	24 51 31.0	51 5.1	9.35155	9.2789	3.14	5.03	333 2 15.0	333
29	18 51 48.83	52 19.42	24 46 35.2	46 4.9	9.35082	9.3441	3.19	5.03	334 2 16.4	334
30	18 57 11.49	57 42.36	24 40 55.2	40 20.3	9.35002	9.4005	3.25	5.03	335 2 17.9	335
Dec 1	19 2 33.51	3 4.65	24 34 31.1	33 51.6	9.34908	9.4506	3.30	5.03	336 2 19.4	336
2	19 7 54.79	8 26.17	24 27 23.0	26 38.8	9.34800	9.4949	3.32	5.02	337 2 20.8	337
3	19 13 15.25	13 46.86	24 19 31.4	18 42.5	9.34686	9.5348	3.35	5.02	338 2 22.2	338
4	19 18 34.84	19 6.67	24 10 56.6	10 2.9	9.34561	9 5712	3.36	5.02	339 2 23.6	339
5	19 23 53.50	24 25.54	24 1 39.0	0 40.5	9.34437	9.6042	3.39	5.01	340 2 25.0	340
6	19 29 11.21	29 43.46	23 51 39.2	50 35.9	9.34301	9.6347	3.42	5.01	341 2 26.4	341
7	19 34 27.89	35 0.32	23 40 57.6	39 49.5	9.34153	9.6629	3.43	5.00	342 2 27.7	342
8	19 39 43.47	40 16.07	23 29 34.6	28 21.6	9.33999	9.6890	3.45	5.00	343 2 29.0	343
9	19 44 57.91	45 30.67	23 17 30.7	16 12.8	9.33840	9.7135	3.48	4.99	344 2 30.3	344
10	19 50 11.17	50 44.09	23 4 46.4	3 23.6	9.33671	9.7362	3.49	4.97	345 2 31.6	345
11	19 55 23.19	55 56.23	22 51 22.3	49 54.7	9.33496	9.7576	3.50	4.97	346 2 32.8	346
12	20 0 33.93	1 7.09	22 37 18.9	35 46.4	9.33313	9.7778	3.52	4.96	347 2 34.0	347
13	20 5 43.35	6 16.63	22 22 36 7	20 59.4	9.33126	9.7966	3.53	4.95	348 2 35.2	348
14	20 10 51.43	11 24.82	22 7 16.6	5 34.5	9.32936	9.8144	3.54	4.95	349 2 36.4	349
15	20 15 58.14	16 31.63	21 51 19.1	49 32.0	9.32740	9.8312	3.54	4.94	350 2 37.6	350
16	20 21 3.45	21 37.04	21 34 44.8	32 52.9	9.32536	9.8471	3.54	4.94	351 2 38.8	351
17	20 26 7.31	26 40.97	21 17 34.4	15 37.8	9.32327	9.8623	3.56	4.93	352 2 39.9	352
18	20 31 9.71	31 43.46	20 59 48.4	57 47.0	9.32119	9.8766	3.56	4.91	353 2 41.1	353
19	20 36 10.64	36 44.45	20 41 27.6	39 21.4	9.31902	9.8902	3.56	4.90	354 2 42.2	354
20	20 41 10.06	41 43.91	20 22 32.7	20 22.0	9.31682	9.9030	3.57	4.90	355 2 43.2	355
21	20 46 07.96	46 41.85	20 3 4.5	0 49.2	9.31465	9.9154	3.57	4.89	356 2 44.2	356
22	20 51 4.36	51 38.25	19 43 3.5	40 43.7	9.31239	9.9271	3.57	4.88	357 2 45.1	357
23	20 55 59.22	56 33.12	19 22 30.6	20 6.4	9.31012	9.9382	3 57	4.87	358 2 46.0	358
24	21 0 52.54	61 26.46	19 1 26.6	58 58.0	9.30784	9.9487	3.58	4.85	359 2 47.0	359
25	21 5 44.31	6 18.25	18 39 52.3	37 19.3	9.30550	9.9588	3.58	4.84	360 2 48.0	360
26	21 10 34.51	11 8.45	18 17 48.3	15 11.1	9.30317	9.9684	3.58	4.82	361 2 48.9	361
27	21 15 23.15	15 57.09	17 55 15.5	52 34.1	9.30084	9.9775	3.58	4.81	362 2 49.8	362
28	21 20 10.23	20 44.14	17 32 14.6	29 29.1	9.29846	9.9862	3.59	4.80	363 2 50.6	363
29	21 24 55.72	25 29.60	17 8 46.5	5 57.1	9.29600	9.9945	3.59	4.78	364 2 51.4	364
30	21 29 39.64	30 13.48	16 44 52.1	41 58.8	9.29350	0.0023	3.59	4.77	365 2 52.2	365
31	21 34 22.00	34 55.80	−16 20 32.2	17 35.0	+9.29095	+0.0097	−3.59	+4.76	366 2 53.0	366

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Jan. 1 21 54.8	1	16 38 45.67	40 51.94	−22 14 12.4	18 39.6	+9.10030	−9.4345	+3.04	+4.46
2 21 53.9	2	16 41 47.35	43 54.28	22 20 37.7	24 57.6	9.10146	9.4208	3.02	4.46
3 21 53.0	3	16 44 49.46	46 57.05	22 26 51.0	31 3.2	9.10253	9.4065	3.00	4.46
4 21 52.1	4	16 47 51.99	50 0.25	22 32 52.0	36 56.3	9.10351	9.3917	2.99	4.46
5 21 51.2	5	16 50 54.94	53 3.86	22 38 40.5	42 37.1	9.10445	9.3762	2.98	4.47
6 21 50.3	6	16 53 58.29	56 7.87	22 44 16.7	48 5.2	9.10539	9.3602	2.97	4.48
7 21 49.5	7	16 57 2.04	59 12.28	22 49 40.4	53 20.6	9.10633	9.3432	2.95	4.48
8 21 48.6	8	17 0 6.18	2 17.09	22 54 51.3	58 23.0	9.10725	9.3254	2.93	4.48
9 21 47.7	9	17 3 10.71	5 22.28	22 59 49.3	63 12.7	9.10814	9.3066	2.92	4.48
10 21 46.8	10	17 6 15.61	8 27.83	23 4 34.6	7 49.3	9.10900	9.2869	2.91	4.49
11 21 46.0	11	17 9 20.87	11 33.74	23 9 6.9	12 12.8	9.10983	9.2661	2.90	4.50
12 21 45.2	12	17 12 26.48	14 39.99	23 13 26.0	16 23.0	9.11063	9.2440	2.89	4.50
13 21 44.4	13	17 15 32.42	17 36.56	23 17 31.9	20 19.9	9.11139	9.2206	2.88	4.50
14 21 43.5	14	17 18 38.68	20 53.45	23 21 24.6	24 3.4	9.11212	9.1959	2.87	4.50
15 21 42.7	15	17 21 45.25	24 0.66	23 25 3.9	27 33.5	9.11285	9.1693	2.86	4.50
16 21 41.9	16	17 24 52.14	27 8.18	23 28 29.8	30 50.0	9.11358	9.1408	2.86	4.50
17 21 41.1	17	17 27 59.34	30 16.00	23 31 42.1	33 52.9	9.11429	9.1100	2.85	4.51
18 21 40.3	18	17 31 6.84	33 24.12	23 34 40.8	36 42.0	9.11498	9.0771	2.84	4.51
19 21 39.5	19	17 34 14.63	36 32.51	23 37 25.8	39 17.4	9.11561	9.0403	2.82	4.51
20 21 38.7	20	17 37 22.68	39 31.17	23 39 57.1	41 38.9	9.11623	9.0019	2.80	4.51
21 21 37.9	21	17 40 31.00	42 50.09	23 42 14.7	43 46.6	9.11684	8.9578	2.78	4.52
22 21 37.1	22	17 43 39.58	45 59.27	23 44 18.4	45 40.3	9.11742	8.9090	2.76	4.52
23 21 36.3	23	17 46 48.41	49 8.69	23 46 8.2	47 19.9	9.11798	8.8537	2.74	4.52
24 21 35.5	24	17 49 57.47	52 18.34	23 47 44.0	48 45.4	9.11852	8.7900	2.72	4.52
25 21 34.8	25	17 53 6.77	55 28.21	23 49 5.8	49 56.9	9.11903	8.7155	2.70	4.52
26 21 34.0	26	17 56 16.28	58 38.29	23 50 13.6	50 54.2	9.11950	8.6248	2.68	4.53
27 21 33.3	27	17 59 25.99	61 48.57	23 51 7.2	51 37.2	9.11996	8.5091	2.65	4.53
28 21 32.5	28	18 2 35.90	4 59.05	23 51 46.6	52 5.9	9.12042	8.3494	2.62	4.53
29 21 31.8	29	18 5 46.01	8 9.71	23 52 11.6	52 20.2	9.12084	8.0933	2.59	4.53
30 21 31.0	30	18 18 56.29	11 20.53	23 52 22.3	52 20.1	9.12120	−7.3907	2.56	4.53
31 21 30.3	31	18 12 6.72	14 31.49	23 52 18.7	52 5.6	9.12154	+7.8727	2.53	4.53
Feb. 1 21 29.5	32	18 15 17.29	17 42.59	23 52 0.8	51 36.9	9.12185	8.2394	2.48	4.53
2 21 28.8	33	18 18 28.00	20 53.81	23 51 28.7	50 53.8	9.12214	8.4354	2.42	4.53
3 21 28.0	34	18 21 38.82	24 5.13	23 50 42.3	49 56.3	9.12238	8.5709	2.35	4.53
4 21 27.3	35	18 24 49.74	27 16.54	23 49 41.5	48 44.4	9.12259	8.6706	2.26	4.53
5 21 26.5	36	18 28 0.75	30 28.03	23 48 26.4	47 18.0	9.12278	8.7573	+2.16	4.54
6 21 25.8	37	18 31 11.83	33 39.58	23 46 56.8	45 37.1	9.12292	8.8276		4.54
7 21 25.0	38	18 34 22.97	36 51.19	23 45 12.8	43 41.8	9.12305	8.8876		4.54
8 21 24.3	39	18 37 34.16	40 2.81	23 43 14.5	41 32.1	9.12313	8.9401		4.54
9 21 23.5	40	18 40 45.37	43 14.45	23 41 1.9	39 7.9	9.12315	8.9872		4.54
10 21 22.8	41	18 43 56.59	46 26 09	23 38 34.9	36 29.3	9.12317	9.0298		4.54
11 21 22.0	42	18 47 7.81	49 37.73	23 35 53.5	33 36.4	9.12317	9.0670		4.54
12 21 21.3	43	18 50 19.02	52 49.36	23 32 57.8	30 29.2	9.12314	9.1036		4.54
13 21 20.5	44	18 53 30.22	56 0.95	23 29 48.0	27 7.5	9.12308	9.1364		4.54
14 21 19.8	45	18 56 41.38	59 12.49	23 26 23.7	23 31.4	9.12299	9.1669		4.54
15 21 19.1	46	18 59 52.50	62 23.99	23 22 45.1	19 41.0	9.12289	9.1951	−2.23	4.53
16 21 18.3	47	19 3 3.57	5 35.43	23 18 52.3	15 36.4	9.12275	9.2217	2.29	4.53
17 21 17.6	48	19 6 14.57	8 46.80	23 14 45.3	11 17.6	9.12258	9.2465	2.34	4.53
18 21 16.8	49	19 9 25.49	11 58.08	23 10 24.1	6 44.6	9.12240	9.2701	2.39	4.53
19 21 16.1	50	19 12 36.33	15 9.26	23 5 48.9	1 57.5	9.12220	9.2923	2.43	4.53
20 21 15.3	51	19 15 47.07	18 20.34	22 59 59.7	56 56.2	9.12197	9.3134	2.46	4.53
21 21 14.6	52	19 18 57.71	21 31.31	22 55 56.3	51 40.8	9.12172	9.3337	2.48	4.53
22 21 13.8	53	19 22 8.23	24 42.17	22 50 38.8	46 11.4	9.12146	9.3525	2.50	4.53
23 21 13.1	54	19 25 18.64	27 52.89	22 45 7.3	40 28.1	9.12118	9.3711	2.52	4.53
24 21 12.3	55	19 28 28.92	31 3.46	22 39 22.1	34 30.9	9.12086	9.3884	2.54	4.53
25 21 11.5	56	19 31 39.05	34 13.88	22 33 23.1	28 19.9	9.12051	9.4050	2.56	4.52
26 21 10.7	57	19 34 49.02	37 24.15	22 27 10.4	21 55.3	9.12015	9.4209	2.58	4.51
27 21 10.0	58	19 37 58.84	40 34.26	22 20 44.1	15 16.9	9.11979	9.4363	2.60	4.51
28 21 9.2	59	19 41 8.50	43 44.18	22 14 4.1	8 24.9	9.11941	9.4510	2.62	4.51
29 21 8.4	60	19 44 17.98	46 53.91	22 7 10.6	1 19.3	9.11897	9.4652	2.65	4.51
30 21 7.6	61	19 47 27.26	50 3.44	22 0 3.6	54 0.4	9.11850	9.4788	2.68	4.50
31 21 6.8	62	19 50 36.33	53 12.77	−21 52 43.3	46 28.2	+9.11803	+9.4919	−2.70	+4.50

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.		Sidereal Date.	Apparent Right Ascension. At Sidereal 0h.	Apparent Right Ascension. At Transit.	Apparent Declination. At Sidereal 0h.	Apparent Declination. At Transit.	Log Coefficient of t in Sidereal Minutes. In R.A.	Log Coefficient of t in Sidereal Minutes. In Dec.	Log Coefficient of t². In R.A.	Log Coefficient of t². In Dec.
	d h m	d	h m s	m s	° ′ ″	′ ″				
Mar.	1 21 7.6	61	19 47 27.26	50 3.44	−22 0 3.6	54 0.4	+9.11850	+9.4788	−2.68	+4.50
	2 21 6.8	62	19 50 36.33	53 12.77	21 52 43.3	46 28.2	9.11803	9.4919	2.70	4.50
	3 21 6.0	63	19 53 45.20	56 21.87	21 45 9.8	38 42.7	9.11755	9.5045	2.72	4.50
	4 21 5.2	64	19 56 53.85	59 30.73	21 37 23.1	30 44.2	9.11702	9.5167	2.74	4.50
	5 21 4.4	65	20 0 2.26	2 39.33	21 29 23.4	22 32.8	9.11646	9.5284	2.77	4.50
	6 21 3.6	66	20 3 10.42	5 47.69	21 21 10.9	14 8.6	9.11587	9.5397	2.80	4.49
	7 21 2.8	67	20 6 18.32	8 55.79	21 12 45.7	5 31.5	9.11527	9.5506	2.82	4.49
	8 21 2.0	68	20 9 25.96	12 3.60	20 64 7.7	56 41.7	9.11464	9.5613	2.83	4.49
	9 21 1.2	69	20 12 33.32	15 11.12	20 55 17.0	47 39.4	9.11398	9.5716	2.84	4.48
	10 21 0.4	70	20 15 40.39	18 18.36	20 46 13.9	38 24.7	9.11332	9.5815	2.85	4.47
	11 20 59.6	71	20 18 47.18	21 25.30	20 36 58.4	28 57.6	9.11263	9.5911	2.86	4.46
	12 20 58.8	72	20 21 53.66	24 31.94	20 27 30.7	19 18.3	9.11193	9.6004	2.87	4.46
	13 20 57.9	73	20 24 59.84	27 38.26	20 17 50.9	9 27.1	9.11122	9.6094	2.88	4.46
	14 20 57.1	74	20 28 5.72	30 44.27	19 67 59.1	59 23.9	9.11050	9.6182	2.89	4.45
	15 20 56.2	75	20 31 11.28	33 49.95	19 57 55.4	49 8.8	9.10975	9.6267	2.89	4.45
	16 20 55.4	76	20 34 16.52	36 55.31	19 47 40.0	38 42.0	9.10900	9.6349	2.89	4.44
	17 20 54.5	77	20 37 21.44	40 0.35	19 37 12.9	28 3.6	9.10825	9.6429	2.90	4.44
	18 20 53.7	78	20 40 26.04	43 5.05	19 26 34.4	17 14.0	9.10748	9.6506	2.91	4.43
	19 20 52.8	79	20 43 30.31	46 9.43	19 15 44.6	6 13.2	9.10671	9.6582	2.91	4.43
	20 20 51.9	80	20 46 34.25	49 13.48	18 64 43.7	55 1.2	9.10594	9.6556	2.91	4.42
	21 20 51.0	81	20 49 37.87	52 17.20	18 53 31.6	43 38.2	9.10516	9.6727	2.91	4.41
	22 20 50.1	82	20 52 41.15	55 20.58	18 42 8.5	32 4.2	9.10436	9.6796	2.91	4.41
	23 20 49.2	83	20 55 44.09	58 23.61	18 30 34.6	20 19.4	9.10356	9.6863	2.91	4.40
	24 20 48.3	84	20 58 46.70	61 26.31	18 18 49.9	8 23.9	9.10276	9.6929	2.91	4.40
	25 20 47.4	85	21 1 48.97	4 28.67	17 66 54.6	56 18.0	9.10195	9.6993	2.91	4.39
	26 20 46.5	86	21 4 50.90	7 30.69	17 54 48.9	44 1.7	9.10114	9.7056	2.91	4.38
	27 20 45.6	87	21 7 52.49	10 32.36	17 42 32.9	31 35.3	9.10033	9.7116	2.91	4.38
	28 20 44.7	88	21 10 53.74	13 33.69	17 30 6.8	18 58.7	9.09951	9.7175	2.91	4.37
	29 20 43.8	89	21 13 54.65	16 34.67	17 17 30.6	6 12.3	9.09869	9.7235	2.92	4.37
	30 20 42.9	90	21 16 55.22	19 35.29	16 64 44.7	53 16.5	9.09785	9.7285	2.93	4.36
	31 20 41.9	91	21 19 55.43	22 35.56	16 51 49.4	40 11.3	9.09698	9.7338	2.94	4.35
Apr.	1 20 41.0	92	21 22 55.28	25 35.46	16 38 44.8	26 56.7	9.09610	9.7389	2.95	4.34
	2 20 40.0	93	21 25 54.77	28 34.99	16 25 30.9	13 32.7	9.09523	9.7440	2.96	4.32
	3 20 39.1	94	21 28 53.89	31 34.15	15 72 7.6	59 59.9	9.09432	9.7489	2.96	4.32
	4 20 38.1	95	21 31 52.63	34 32.94	15 58 35.5	46 18.3	9.09342	9.7536	2.96	4.31
	5 20 37.2	96	21 34 51.01	37 31.36	15 44 54.7	32 28.1	9.09255	9.7582	2.96	4.30
	6 20 36.2	97	21 37 49.03	40 29.40	15 31 5.4	18 29.6	9.09165	9.7626	2.96	4.30
	7 20 35.2	98	21 40 46.67	43 27.07	15 17 7.8	4 22.8	9.09073	9.7670	2.96	4.29
	8 20 34.2	99	21 43 43.94	46 24.37	14 63 1.9	50 7.8	9.08982	9.7711	2.96	4.28
	9 20 33.2	100	21 46 40.84	49 21.29	14 48 47.9	35 45.1	9.08891	9.7751	2.96	4.27
	10 20 32.2	101	21 49 37.37	52 17 84	14 34 26.2	21 14.6	9.08800	9.7790	2.96	4.26
	11 20 31.2	102	21 52 33.53	55 14.02	14 19 56.8	6 36.5	9.08708	9.7828	2.96	4.25
	12 20 30.2	103	21 55 29.31	58 9.83	13 65 19.9	51 50.9	9.08618	9.7865	2.95	4.24
	13 20 29.2	104	21 58 24.73	61 5.29	13 50 35.5	36 58.0	9.08529	9.7901	2.94	4.23
	14 20 28.2	105	22 1 19.80	4 0.38	13 35 43.8	21 57.9	9.08441	9.7936	2.93	4.22
	15 20 27.2	106	22 4 14.51	6 55.11	13 20 45.0	6 51.1	9.08351	9.7969	2.92	4.20
	16 20 26.1	107	22 7 8.86	9 49.48	12 65 39.4	51 37.7	9.08263	9.8002	2.92	4.19
	17 20 25.1	108	22 10 2.86	12 43.50	12 50 27.3	36 17.7	9.08175	9.8033	2.92	4.18
	18 20 24.0	109	22 12 56.51	15 37.18	12 35 8.7	20 51.2	9.08088	9.8063	2.91	4.17
	19 20 23.0	110	22 15 49.81	18 30.52	12 19 43.6	5 18.3	9.08003	9.8093	2.90	4.16
	20 20 21.9	111	22 18 42.78	21 23.52	11 64 12.1	49 39.3	9.07920	9.8123	2.89	4.15
	21 20 20.9	112	22 21 35.42	24 16.21	11 48 34.6	33 54.4	9.07838	9.8150	2.89	4.14
	22 20 19.8	113	22 24 27.74	27 8.58	11 32 51.2	18 3.9	9.07757	9.8177	2.89	4.13
	23 20 18.8	114	22 27 19.74	30 0.62	11 17 2.1	2 7.7	9.07676	9.8202	2.88	4.11
	24 20 17.7	115	22 30 11.42	32 52.34	10 61 7.5	46 6.2	9.07595	9.8227	2.87	4.09
	25 20 16.6	116	22 33 2.78	35 43.74	10 45 7.6	29 59.7	9.07514	9.8250	2.86	4.07
	26 20 15.5	117	22 35 53.82	38 34.84	10 29 2.7	13 48.2	9.07436	9.8273	2.86	4.06
	27 20 14.4	118	22 38 44.56	41 25.62	9 72 52.9	57 31.8	9.07358	9.8295	2.86	4.04
	28 20 13.3	119	22 41 34.99	44 16.09	9 56 38.2	41 10.7	9.07279	9.8316	2.86	4.02
	29 20 12.2	120	22 44 25.11	47 6.26	9 40 18.7	24 45.1	9.07200	9.8336	2.86	4.00
	30 20 11.1	121	22 47 14.92	49 56.12	9 23 54.8	8 15.4	9.07122	9.8355	2.86	3.98
	31 20 10.0	122	22 50 4.43	52 45.69	− 8 67 26.9	51 41.8	+9.07046	+9.8373	−2.86	+3.96

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of *t* in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
May 1 20 10.0	122	22 50 4.43	52 45.69	− 8 67 26.9	51 41.8	+9.07046	+9.8373	−2.86	+3.96
2 20 8.9	123	22 52 53.65	55 34.95	8 50 55.0	35 4.4	9.06971	9.8390	2.86	3.94
3 20 7.8	124	22 55 42.57	58 23.91	8 34 19.4	18 23.3	9.06894	9.8406	2.86	3.92
4 20 6.6	125	22 58 31.19	61 12.58	8 17 40.1	1 38.8	9.06816	9.8421	2.86	3.90
5 20 5.5	126	23 1 19.51	4 0.94	7 60 57.5	44 51.0	9.06738	9.8435	2.86	3.87
6 20 4.4	127	23 4 7.53	6 49.00	7 44 11.6	28 0.1	9.06661	9.8449	2.85	3.84
7 20 3.3	128	23 6 55.25	9 36.77	7 27 22.6	11 6.4	9.06586	9.8462	2.84	3.81
8 20 2 1	129	23 9 42.69	12 24.27	6 70 30.8	54 10.1	9.06514	9.8474	2.83	3.78
9 20 1.0	130	23 12 29.85	15 11.47	6 53 36.3	37 11.2	9.06440	9.8485	2.82	3.75
10 19 59.8	131	23 15 16.72	17 58.39	6 36 39.3	20 10.0	9.06367	9.8495	2.81	3.72
11 19 58.7	132	23 18 3.31	20 45.04	6 19 40.0	3 6.6	9.06294	9.8505	2.80	3.68
12 19 57.5	133	23 20 49.63	23 31.43	5 62 38.5	46 1.2	9.06223	9.8514	2.79	3 64
13 19 56.3	134	23 23 35.68	26 17.55	5 45 34.9	28 53.9	9.06155	9.8522	2.78	3.59
14 19 55.1	135	23 26 21.48	29 3.41	5 28 29.6	11 45.0	9.06088	9.8529	2.77	3.54
15 19 53.9	136	23 29 7.02	31 49.03	4 71 22.6	54 34.5	9.06023	9.8536	2.76	3.49
16 19 52.7	137	23 31 52.32	34 34.41	4 54 14.0	37 22.7	9.05960	9.8542	2.75	3.43
17 19 51.5	138	23 34 37.38	37 19.56	4 37 4.1	20 9.8	9.05898	9.8548	2.74	3.37
18 19 50.3	139	23 37 22.21	40 4.48	4 19 53.2	2 55.9	9.05837	9.8553	2.73	3.31
19 19 49.1	140	23 40 6.81	42 49.18	3 62 41.3	45 41.2	9.05779	9.8556	2.72	+3.24
20 19 47.9	141	23 42 51.20	45 33.67	3 45 28.5	28 25.8	9.05722	9.8558	2.70	
21 19 46.7	142	23 45 35.37	48 17.94	3 28 15.1	11 9.8	9.05666	9.8561	2.69	
22 19 45.5	143	23 48 19.33	51 2.01	2 71 1.1	53 53.5	9.05611	9.8563	2.68	
23 19 44.3	144	23 51 3.09	53 45.88	2 53 46.7	36 37.0	9.05558	9.8564	2.67	
24 19 43.1	145	23 53 46.65	56 29.55	2 36 32.1	19 20.6	9.05505	9.8564	2.66	
25 19 41.9	146	23 56 30.01	59 13.03	2 19 17.7	2 4.7	9.05453	9.8563	2.66	
26 19 40.7	147	23 59 13.18	61 56.32	1 62 3.7	44 49.2	9.05403	9.8561	2.65	
	148	0 1 56.16		1 44 50.1		9.05352	9.8559	2.64	−3.23
27 19 39.5	149	0 4 38.95	4 39.41	1 27 37.0	27 34.2	9.05301	9.8557	2.64	3.38
28 19 38.2	150	0 7 21.55	7 22.31	1 10 24.6	10 19.8	9.05249	9.8553	2.64	3.48
29 19 37.0	151	0 10 3.95	10 5.02	0 53 13.2	53 6.4	9.05199	9.8548	2.64	3.53
30 19 35.8	152	0 12 46.17	12 47.55	0 36 3.1	35 54.3	9.05150	9.8543	2.64	3.58
31 19 34.6	153	0 15 28.21	15 29.89	0 18 54.4	18 43.6	9.05102	9.8537	2.64	3.63
June 1 19 33.3	154	0 18 10.07	18 12.05	− 0 1 47.2	1 34.5	9.05051	9.8530	2.64	3.67
2 19 32.1	155	0 20 51.74	20 54.01	+ 0 15 18.4	15 33.0	9.05001	9.8523	2.64	3.71
3 19 30.8	156	0 23 33.22	23 35.79	0 32 22.2	32 38.6	9.04950	9.8514	2.64	3.74
4 19 29.6	157	0 26 14.51	26 17.38	0 49 23.9	49 42.2	9.04899	9.8505	2.64	3.76
5 19 28.3	158	0 28 55.61	28 58.79	1 6 23.3	6 43.4	9.04851	9.8495	2.64	3.78
6 19 27.1	159	0 31 36.54	31 40.01	1 23 20.3	23 42.2	9.04802	9.8484	2.64	3.80
7 19 25.8	160	0 34 17.28	34 21.05	1 40 14.7	40 38.5	9.04753	9.8473	2.64	3.82
8 19 24.6	161	0 36 57.85	37 1.92	1 57 6.5	57 32.2	9.04705	9.8461	2.64	3.84
9 19 23.3	162	0 39 38.24	39 42 61	2 13 55.4	14 23.0	9.04657	9.8449	2.63	3.86
10 19 22.1	163	0 42 18.45	42 23.12	2 30 41.4	31 10.8	9.04611	9.8436	2.62	3.88
11 19 20.8	164	0 44 58.50	45 3.46	2 47 24.2	47 55.2	9.04568	9.8421	2.61	3.90
12 19 19.5	165	0 47 38.39	47 43.64	3 4 3.5	4 36.2	9.04524	9.8406	2.60	3.91
13 19 18.2	166	0 50 18.12	50 23.66	3 20 39.3	21 13.8	9.04482	9.8391	2.58	3.92
14 19 17.0	167	0 52 57.70	53 3.53	3 37 11.6	37 47.9	9.04441	9.8376	2.57	3.94
15 19 15.7	168	0 55 37.13	55 43.25	3 53 40.4	54 18.3	9.04403	9.8359	2.56	3.96
16 19 14.4	169	0 58 16.43	58 22.83	4 10 5.3	10 44.9	9.04364	9.8342	2.55	3.98
17 19 13.1	170	1 0 55.58	1 2.27	4 26 26.1	27 7.4	9.04326	9.8324	2.54	4.00
18 19 11.8	171	1 3 34.59	3 41.56	4 42 42.9	43 25.7	9.04286	9.8305	2.53	4.02
19 19 10.5	172	1 6 13.45	6 20.71	4 58 55.4	59 39.7	9.04248	9.8286	2.53	4.04
20 19 9.2	173	1 8 52.18	8 59.72	5 15 3.5	15 49.4	9.04211	9.8266	2.53	4.06
21 19 7.9	174	1 11 30.77	11 38.59	5 31 7.0	31 54.5	9.04171	9.8244	2.53	4.08
22 19 6.6	175	1 14 9.21	14 17.32	5 47 5.7	47 54.7	9.04132	9.8222	2.53	4.09
23 19 5.3	176	1 16 47.50	16 55.91	6 2 59.4	3 49.6	9.04093	9.8199	2.53	4.10
24 19 4.0	177	1 19 25.67	19 34.35	6 18 48.0	19 39.9	9.04054	9.8176	2.54	4.12
25 19 2.7	178	1 22 3.69	22 12.65	6 34 31.6	35 24.9	9.04014	9.8152	2.55	4.13
26 19 1.4	179	1 24 41.56	24 50.79	6 50 9.9	51 4.6	9.03971	9.8127	2.57	4.14
27 19 0.1	180	1 27 19.26	27 28.77	7 5 42.6	6 38.7	9.03926	9.8101	2.59	4.15
28 18 58.8	181	1 29 56.80	30 6.59	7 21 9.7	22 7.1	9.03880	9.8074	2.61	4.16
29 18 57.5	182	1 32 34.17	32 44.24	7 36 31.0	37 29.8	9.03833	9.8046	2 62	4.17
30 18 56.2	183	1 35 11.37	35 21.71	+ 7 51 46.3	52 46.5	+9.03784	+9.8018	−2.63	−4.18

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
July 1 18 54.9	184	1 37 48.39	37 59.00	+ 8 6 55.5	7 56.9	+9.03733	+9.7988	−2.64	−4.19
2 18 53.6	185	1 40 25.22	40 36.10	8 21 58.4	23 0.9	9.03681	9.7957	2.66	4.19
3 18 52.2	186	1 43 1.86	43 13.01	8 36 54.8	37 58.4	9.03626	9.7926	2.68	4.19
4 18 50.9	187	1 45 38.30	45 49.71	8 51 44.7	52 49.5	9.03570	9.7895	2.70	4.20
5 18 49.6	188	1 48 14.53	48 26.22	9 6 28.2	7 34.2	9.03513	9.7863	2.71	4.21
6 18 48.3	189	1 50 50.56	51 2.52	9 21 5.1	22 12.1	9.03456	9.7829	2.72	4.22
7 18 46.9	190	1 53 26.38	53 38.61	9 35 35.2	36 43.1	9.03396	9.7794	2.72	4.22
8 18 45.6	191	1 56 1.98	56 14.48	9 49 58.2	51 7.1	9.03335	9.7759	2.72	4.22
9 18 44.2	192	1 58 37.36	58 50.12	10 4 14.1	5 24.0	9.03274	9.7723	2.72	4.22
10 18 42.9	193	2 1 12.53	1 25.54	10 18 22.9	19 33.8	9.03213	9.7687	2.73	4.23
11 18 41.5	194	2 3 47.47	4 0.74	10 32 24.6	33 36.4	9.03150	9.7649	2.74	4.24
12 18 40.2	195	2 6 22.19	6 35.71	10 46 18.9	47 31.6	9.03085	9.7611	2.75	4.25
13 18 38.8	196	2 8 56.67	9 10.45	11 0 5.8	1 19.3	9.03019	9.7572	2.76	4.26
14 18 37.4	197	2 11 30.92	11 44.95	11 13 45.2	14 59.4	9.02952	9.7532	2.76	4.26
15 18 36.0	198	2 14 4.93	14 19.21	11 27 17.0	28 32.0	9.02884	9.7491	2.77	4.26
16 18 34.7	199	2 16 38.69	16 53.23	11 40 41.2	41 56.9	9.02814	9.7450	2.78	4.27
17 18 33.3	200	2 19 12.21	19 27.00	11 53 57.7	55 14.0	9.02743	9.7407	2.79	4.28
18 18 31.9	201	2 21 45.47	22 0.51	12 7 6.4	8 23.3	9.02670	9.7364	2.80	4.29
19 18 30.5	202	2 24 18.47	24 33.75	12 20 7.2	21 24.7	9.02596	9.7319	2.82	4.29
20 18 29.1	203	2 26 51.21	27 6.72	12 32 59.9	34 18.0	9.02520	9.7274	2.84	4.29
21 18 27.7	204	2 29 23.66	29 39.42	12 45 44.4	47 3.0	9.02434	9.7228	2.86	4.29
22 18 26.3	205	2 31 55.81	32 11.82	12 58 20.8	59 39.9	9.02347	9.7181	2.88	4.30
23 18 24.9	206	2 34 27.65	34 43.89	13 10 49.0	12 8.6	9.02257	9.7133	2.90	4.30
24 18 23.5	207	2 36 59.17	37 15.64	13 23 8.9	24 28.9	9.02164	9.7084	2.91	4.30
25 18 22.1	208	2 39 30.36	39 47.04	13 35 20.3	36 40.6	9.02065	9.7033	2.92	4.30
26 18 20.7	209	2 42 1.19	42 18.09	13 47 23.1	48 43.7	9.01961	9.6982	2.93	4.30
27 18 19.2	210	2 44 31.64	44 48.76	13 59 17.3	60 38.2	9.01852	9.6929	2.94	4.31
28 18 17.8	211	2 47 1.71	47 19.05	14 11 3.0	12 24.1	9.01738	9.6876	2.96	4.32
29 18 16.4	212	2 49 31.40	49 48.93	14 22 40.1	24 1.4	9.01617	9.6821	2.98	4.32
30 18 15.0	213	2 52 0.63	52 18.39	14 34 8.4	35 29.8	9.01488	9.6766	3.00	4.32
31 18 13.5	214	2 54 29.44	54 47.41	14 45 27.8	46 49.3	9.01362	9.6709	3.02	4.32
Aug. 1 18 12.1	215	2 56 57.80	57 15.97	14 56 38.3	57 59.8	9.01228	9.6651	3.04	4.33
2 18 10.6	216	2 59 25.70	59 44.05	15 7 39.7	9 1.3	9.01087	9.6592	3.06	4.33
3 18 9.1	217	3 1 53.10	2 11.63	15 18 32.3	19 53.9	9.00939	9.6533	3.07	4.33
4 18 7.6	218	3 4 19.99	4 38.70	15 29 16.0	30 37.5	9.00785	9.6472	3.08	4.33
5 18 6.1	219	3 6 46.35	7 5.25	15 39 50.6	41 12.0	9.00626	9.6411	3.10	4.33
6 18 4.6	220	3 9 12.17	9 31.26	15 50 16.2	51 37.6	9.00464	9.6348	3.12	4.34
7 18 3.1	221	3 11 37.44	11 56.71	16 0 32.8	1 54.0	9.00298	9.6285	3.14	4.34
8 18 1.5	222	3 14 2.15	14 21.58	16 10 40.5	12 1.5	9.00127	9.6220	3.15	4.34
9 18 0.0	223	3 16 26.28	16 45.86	16 20 39.0	21 59.8	8.99947	9.6155	3.16	4.34
10 17 58.4	224	3 18 49.81	19 9.54	16 30 28.4	31 48.9	8.99764	9.6088	3.17	4.34
11 17 56.9	225	3 21 12.72	21 32.60	16 40 8.8	41 29.0	8.99576	9.6021	3.18	4.34
12 17 55.3	226	3 23 35.01	23 55.03	16 49 40.3	51 0.1	8.99384	9.5952	3.20	4.33
13 17 53.8	227	3 25 56.66	26 16.82	16 59 2.8	60 22.2	8.99184	9.5883	3.21	4.33
14 17 52.2	228	3 28 17.65	28 37.94	17 8 16.3	9 35.3	8.98978	9.5812	3.22	4.33
15 17 50.6	229	3 30 37.96	30 58.38	17 17 20.8	18 39.4	8.98763	9.5740	3.23	4.33
16 17 49.0	230	3 32 57.56	33 18.11	17 26 16.3	27 34.5	8.98539	9.5667	3.25	4.33
17 17 47.4	231	3 35 16.43	35 37.10	17 35 2.8	36 20.5	8.98309	9.5593	3.27	4.33
18 17 45.8	232	3 37 34.56	37 55.34	17 43 40.3	44 57.5	8.98072	9.5518	3.28	4.33
19 17 44.1	233	3 39 51.92	40 12.80	17 52 8.9	53 25.5	8.97822	9.5443	3.29	4.32
20 17 42.4	234	3 42 8.47	42 29.44	18 0 28.7	1 44.8	8.97563	9.5367	3.30	4.32
21 17 40.7	235	3 44 24.20	44 45.25	18 8 39.8	9 55.2	8.97293	9.5289	3.32	4.32
22 17 39.0	236	3 46 39.08	47 0.20	18 16 42.0	17 56.8	8.97015	9.5210	3.34	4.31
23 17 37.3	237	3 48 53.07	49 14.25	18 24 35.4	25 49.6	8.96724	9.5130	3.35	4.31
24 17 35.6	238	3 51 6.15	51 27.38	18 32 20.2	33 33.7	8.96418	9.5048	3.36	4.31
25 17 33.9	239	3 53 18.30	53 39.54	18 39 56.3	41 9.1	8.96098	9.4966	3.38	4.31
26 17 32.1	240	3 55 29.40	55 50.70	18 47 23.7	48 35.8	8.95764	9.4882	3.40	4.31
27 17 30.4	241	3 57 39.49	58 0.82	18 54 42.6	55 53.9	8.95410	9.4798	3.42	4.30
28 17 28.6	242	3 59 48.53	60 9.88	19 1 52.9	3 3.5	8.95053	9.4713	3.43	4.30
29 17 26.8	243	4 1 56.48	2 17.84	19 8 54.8	10 4.6	8.94678	9.4627	3.44	4.30
30 17 25.0	244	4 4 3.31	4 24.66	19 15 48.5	16 57.5	8.94287	9.4540	3.45	4.30
31 17 23.2	245	4 6 8.98	6 30.31	+19 22 34.0	23 42.2	+8.93881	+9.4452	−3.46	−4.29

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Sept. 1 17 21.3	246	4 8 13.46	8 34.75	+19 29 11.2	30 18.6	+8.93459	+9.4362	−3.48	−4.29
2 17 19.4	247	4 10 16.71	10 37.96	19 35 40.3	36 46.8	8.93018	9.4272	3.49	4.29
3 17 17.5	248	4 12 18.69	12 39.89	19 42 1.3	43 7.0	8.92561	9.4181	3.50	4.28
4 17 15.6	249	4 14 19.37	14 40.50	19 48 14.4	49 19.2	8.92089	9.4090	3.51	4.27
5 17 13.7	250	4 16 18.73	16 39.78	19 54 19.8	55 23.7	8.91602	9.3999	3.52	4.26
6 17 11.7	251	4 18 16.73	18 37.70	20 0 17.6	1 20.7	8.91094	9.3907	3.53	4.25
7 17 9.7	252	4 20 13.33	20 34.21	20 6 7.9	7 10.2	8.90570	9.3815	3.54	4.25
8 17 7.6	253	4 22 8.51	22 29.28	20 11 50.8	12 52.2	8.90029	9.3722	3.55	4.24
9 17 5.6	254	4 24 2.25	24 22.90	20 17 26.4	18 26.9	8.89470	9.3629	3.56	4.23
10 17 3.6	255	4 25 54.50	26 15.03	20 22 54.9	23 54.4	8.88886	9.3535	3.57	4.22
11 17 1.5	256	4 27 45.22	28 5.60	20 28 16.3	29 14.9	8.88278	9.3441	3.58	4.21
12 16 59.4	257	4 29 34.37	29 54.59	20 33 30.8	34 28.5	8.87649	9.3347	3.60	4.20
13 16 57.2	258	4 31 21.93	31 41.99	20 38 38.6	39 35.4	8.87001	9.3253	3.61	4.19
14 16 55.0	259	4 33 7.87	33 27.72	20 43 39.8	44 35.8	8.86316	9.3158	3.62	4.18
15 16 52.8	260	4 34 52.09	35 11.74	20 48 34.5	49 29.7	8.85599	9.3064	3.63	4.17
16 16 50.6	261	4 36 34.59	36 54.02	20 53 22.8	54 17.1	8.84858	9.2969	3.64	4.15
17 16 48.4	262	4 38 15.31	38 34.50	20 58 5.0	58 58.5	8.84079	9.2875	3.65	4.14
18 16 46.1	263	4 39 54.20	40 13.15	21 2 41.3	3 34.0	8.83267	9.2781	3.66	4.13
19 16 43.7	264	4 41 31.22	41 49.91	21 7 11.7	8 3.6	8.82421	9.2689	3.67	4.12
20 16 41.4	265	4 43 6.33	43 24.72	21 11 36.3	12 27.5	8.81528	9.2597	3.68	4.11
21 16 39.0	266	4 44 39.44	44 57.52	21 15 55.4	16 45.9	8.80583	9.2507	3.70	4.10
22 16 36.6	267	4 46 10.50	46 28.27	21 20 9.2	20 58.8	8.79591	9.2416	3.71	4.09
23 16 34.1	268	4 47 39.45	47 56.88	21 24 17.8	25 6.6	8.78548	9.2326	3.72	4.08
24 16 31.6	269	4 49 6.24	49 23.31	21 28 21.3	29 9.3	8.77449	9.2237	3.73	4.07
25 16 29.0	270	4 50 30.80	50 47.49	21 32 19.8	33 7.1	8.76291	9.2149	3.74	4.06
26 16 26.4	271	4 51 53.08	52 9.37	21 36 13.6	37 0.1	8.75074	9.2061	3.76	4.04
27 16 23.8	272	4 53 13.03	53 28.91	21 40 2.8	40 48.5	8.73795	9.1975	3.77	4.03
28 16 21.2	273	4 54 30.60	54 46.05	21 43 47.4	44 32.5	8.72439	9.1889	3.78	4.02
29 16 18.5	274	4 55 45.71	56 0.72	21 47 27.7	48 12.3	8.71005	9.1809	3.79	4.01
30 16 15.7	275	4 56 58.32	57 12.86	21 51 4.1	51 48.0	8.69488	9.1730	3.80	3.99
Oct. 1 16 13.0	276	4 58 8.36	58 22.42	21 54 36.6	55 19.9	8.67888	9.1651	3.81	3.96
2 16 10.2	277	4 59 15.81	59 29.36	21 58 5.3	58 48.0	8.66186	9.1574	3.81	3.94
3 16 7.3	278	5 0 20.58	0 33.62	22 1 30.2	2 12.4	8.64373	9.1498	3.82	3.92
4 16 4.4	279	5 1 22.61	1 35.10	22 4 51.7	5 33.4	8.62444	9.1425	3.83	3.90
5 16 1.4	280	5 2 21.87	2 33.81	22 8 10.0	8 51.2	8.60393	9.1355	3.84	3.88
6 15 58.5	281	5 3 18.32	3 29.69	22 11 25.3	12 6.0	8.58204	9.1289	3.85	3.86
7 15 55.4	282	5 4 11.88	4 22.67	22 14 37.5	15 17.6	8.55848	9.1220	3.85	3.83
8 15 52.3	283	5 5 2.52	5 12.70	22 17 46.7	18 26.4	8.53308	9.1154	3.86	3.81
9 15 49.1	284	5 5 50.16	5 59.73	22 20 53.1	21 32.3	8.50553	9.1089	3.87	3.78
10 15 45.9	285	5 6 34.76	6 43.70	22 23 56.8	24 35.5	8.47571	9.1027	3.88	3.75
11 15 42.7	286	5 7 16.28	7 24.57	22 26 57.9	27 36.2	8.44321	9.0968	3.89	3.72
12 15 39.4	287	5 7 54.67	8 2.29	22 29 56.6	30 34.5	8.40737	9.0911	3.89	3.71
13 15 36.0	288	5 8 29.86	8 36.79	22 32 53.1	33 30.6	8.36753	9.0857	3.89	3.70
14 15 32.6	289	5 9 1.80	9 8.04	22 35 47.6	36 24.7	8.32280	9.0803	3.90	3.69
15 15 29.2	290	5 9 30.42	9 35.94	22 38 39.9	39 16.5	8.27180	9.0750	3.91	3.68
16 15 25.6	291	5 9 55.65	10 0.44	22 41 30.0	42 6.3	8.21289	9.0696	3.92	3.68
17 15 22.0	292	5 10 17.44	10 21.48	22 44 18.0	44 53.9	8.14375	9.0643	3.92	3.68
18 15 18.4	293	5 10 35.75	10 39.02	22 47 4.0	47 39.5	8.06004	9.0590	3.92	3.68
19 15 14.7	294	5 10 50.51	10 53.01	22 49 47.9	50 23.1	7.95424	9.0538	3.93	3.68
20 15 10.9	295	5 11 1.67	11 3.39	22 52 29.9	53 4.7	7.81129	9.0488	3.94	3.69
21 15 7.1	296	5 11 9.16	11 10.08	22 55 10.0	55 44.3	7.59253	9.0437	3.95	3.70
22 15 3.3	297	5 11 12.94	11 13.04	22 57 48.2	58 22.1	+7.12153	9.0383	3.95	3.71
23 14 59.4	298	5 11 12.97	11 12.25	23 0 24.4	0 57.8	−7.11232	9.0323	3.95	3.72
24 14 55.3	299	5 11 9.21	11 7.66	23 2 58.5	3 31.3	7.59561	9.0259	3.96	3.73
25 14 51.2	300	5 11 1.62	10 59.22	23 5 30.1	6 2.4	7.82028	9.0190	3.96	3.74
26 14 47.0	301	5 10 50.17	10 46.93	23 7 59.2	8 31.0	7.96826	9.0117	3.97	3.76
27 14 42.8	302	5 10 34.85	10 30.77	23 10 25.9	10 57.1	8.07893	9.0042	3.97	3.79
28 14 38.6	303	5 10 15.63	10 10.72	23 12 50.2	13 20.7	8.16757	8.9961	3.97	3.82
29 14 34.3	304	5 9 52.49	9 46.75	23 15 11.9	15 41.7	8.24123	8.9873	3.97	3.85
30 14 29.8	305	5 9 25.44	9 18.88	23 17 30.5	17 59.6	8.30381	8.9778	3.97	3.88
31 14 25.3	306	5 8 54.52	8 47.13	23 19 45.6	20 14.0	8.35844	8.9671	3.96	3.91
32 14 20.8	307	5 8 19.70	8 11.52	+23 21 57.3	22 24.9	−8.40666	+8.9556	−3.96	−3.94

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension. At Sidereal 0h.	Apparent Right Ascension. At Transit.	Apparent Declination. At Sidereal 0h.	Apparent Declination. At Transit.	Log Coefficient of t in Sidereal Minutes. In R.A.	Log Coefficient of t in Sidereal Minutes. In Dec.	Log Coefficient of t². In R.A.	Log Coefficient of t². In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Nov. 1 14 20.8	307	5 8 19.70	8 11.52	+23 21 57.3	22 24.9	−8.40686	+8.9556	−3.96	−3.94
2 14 16.2	308	5 7 41.06	7 32.08	23 24 5.6	24 32.3	8.44958	8.9440	3.96	3.97
3 14 11.6	309	5 6 58.61	6 48.85	23 26 10.3	26 36.1	8.48834	8.9307	3.95	4.01
4 14 6.9	310	5 6 12.40	6 1.87	23 28 11.1	28 35.8	8.52342	8.9155	3.94	4.05
5 14 2.2	311	5 5 22.49	5 11.21	23 30 7.5	30 31.1	8.55542	8.8984	3.93	4.08
6 13 57.4	312	5 4 28.93	4 16.92	23 31 59.0	32 21.5	8.58472	8.8791	3.92	4.11
7 13 52.5	313	5 3 31.80	3 19.07	23 33 45.5	34 6.9	8.61157	8.8581	3.91	4.13
8 13 47.5	314	5 2 31.18	2 17.76	23 35 26.7	35 46.8	8.63634	8.8350	3.90	4.15
9 13 42.5	315	5 1 27.14	1 13.07	23 37 2.4	37 21.2	8.65924	8.8092	3.89	4.17
10 13 37.4	316	5 0 19.77	0 5.07	23 38 32.3	38 49.8	8.68039	8.7808	3.87	4.19
11 13 32.3	317	4 59 9.17	58 53.88	23 39 56.2	40 12.3	8.69994	8.7482	3.85	4.21
12 13 27.1	318	4 57 55.45	57 39.60	23 41 13.6	41 28.3	8.71792	8.7119	3.83	4.23
13 13 21.9	319	4 56 38.75	56 22.38	23 42 24.5	42 37.8	8.73446	8.6714	3.81	4.24
14 13 16.7	320	4 55 19.19	55 2.33	23 43 28.7	43 40.5	8.74980	8.6248	3.79	4.25
15 13 11.4	321	4 53 56.87	53 39.57	23 44 25.9	44 36.2	8.76395	8.5700	3.76	4.26
16 13 6.0	322	4 52 31.95	52 14.24	23 45 15.7	45 24.3	8.77679	8.5043	3.74	4.27
17 13 0.6	323	4 51 4.61	50 46.55	23 45 57.9	46 4.9	8.78841	8.4250	3.72	4.28
18 12 55.2	324	4 49 35.02	49 16.64	23 46 32.3	46 37.6	8.79896	8.3261	3.70	4.29
19 12 49.7	325	4 48 3.33	47 44.65	23 46 58.9	47 2.6	8.80851	8.1956	3.68	4.30
20 12 44.2	326	4 46 29.71	46 10.77	23 47 17.5	47 19.6	8.81698	8.0027	3.55	4.30
21 12 38.7	327	4 44 54.87	44 35.23	23 47 27.9	47 28.4	8.82430	+7.6369	3.40	4.29
22 12 33.2	328	4 43 17.54	42 58.25	23 47 30.0	47 28.9	8.83051	−7.1513	3.42	4.28
23 12 27.6	329	4 41 39.43	41 20.01	23 47 23.8	47 21.2	8.83576	7.8528	3.32	4.27
24 12 22.1	330	4 40 0.23	39 40.73	23 47 9.5	47 5.3	8.84007	8.1056	3.17	4.27
25 12 16.5	331	4 38 20.15	38 0.65	23 46 47.1	46 41.4	8.84333	8.2623	2.97	4.26
26 12 10.9	332	4 36 39.45	36 19.99	23 46 16.8	46 9.6	8.84551	8.3757	−2.40	4.24
27 12 5.3	333	4 34 58.36	34 38.98	23 45 38.7	45 30.1	8.84663	8.4638	+2.33	4.22
28 11 59.7	334	4 33 17.14	32 57.88	23 44 53.1	44 43.1	8.84671	8.5336	2.89	4.20
29 11 54.1	335	4 31 36.01	31 16.94	23 44 0.3	43 49.1	8.84583	8.5918	3.13	4.18
30 11 48.5	336	4 29 55.20	29 36.35	23 43 0.6	42 48.2	8.84394	8.6400	3.28	4.16
Dec. 1 11 42.9	337	4 28 14.95	27 56.37	23 41 54.4	41 41.1	8.84101	8.6819	3.39	4.13
2 11 37.3	338	4 26 35.49	26 17.23	23 40 42.2	40 27.7	8.83701	8.7180	3.47	4.09
3 11 31.7	339	4 24 57.07	24 39.16	23 39 24.2	39 8.8	8.83198	8.7481	3.54	4.04
4 11 26.2	340	4 23 19.89	23 2.35	23 38 1.0	37 44.9	8.82599	8.7733	3.60	3.99
5 11 20.6	341	4 21 44.15	21 27.01	23 36 33.1	36 16.5	8.81895	8.7955	3.64	3.94
6 11 15.1	342	4 20 10.07	19 53.38	23 35 1.2	34 44.0	8.81092	8.8139	3.67	3.87
7 11 9.7	343	4 18 37.81	18 21.59	23 33 25.7	33 8.0	8.80194	8.8283	3.70	3.78
8 11 4.3	344	4 17 7.54	16 51.80	23 31 47.1	31 29.1	8.79193	8.8406	3.73	3.66
9 10 58.9	345	4 15 39.44	15 24.22	23 30 6.1	29 48.0	8.78081	8.8493	3.76	3.60
10 10 53.5	346	4 14 13.68	13 58.98	23 28 23.2	28 5.1	8.76868	8.8554	3.79	−3.38
11 10 48.3	347	4 12 50.37	12 36.20	23 26 39.9	26 21.4	8.75553	8.8583	3.81	
12 10 43.0	348	4 11 29.65	11 16.03	23 24 55.6	24 37.3	8.74124	8.8601	3.83	
13 10 37.7	349	4 10 11.65	9 58.59	23 23 11.2	22 53.1	8.72576	8.8595	3.85	+3.42
14 10 32.5	350	4 8 56.49	8 43.99	23 21 27.2	21 9.4	8.73905	8.8564	3.86	3.61
15 10 27.4	351	4 7 44.27	7 32.35	23 19 44.3	19 26.9	8.69109	8.8505	3.87	3.70
16 10 22.3	352	4 6 35.08	6 23.75	23 18 3.1	17 46.2	8.67181	8.8424	3.88	3.78
17 10 17.3	353	4 5 29.00	5 18.27	23 16 24.0	16 7.6	8.65113	8.8320	3.89	3.85
18 10 12.4	354	4 4 26.10	4 15.98	23 14 47.5	14 31.7	8.62885	8.8192	3.90	3.91
19 10 7.5	355	4 3 26.47	3 16.95	23 13 14.1	12 59.0	8.60477	8.8035	3.91	3.96
20 10 2.6	356	4 2 30.17	2 21.26	23 11 44.4	11 30.1	8.57887	8.7845	3.91	4.01
21 9 57.8	357	4 1 37.26	1 28.96	23 10 18.8	10 5.2	8.55095	8.7632	3.92	4.06
22 9 53.0	358	4 0 47.76	0 40.08	23 8 57.5	8 44.8	8.52080	8.7391	3.93	4.10
23 9 48.3	359	3 59 61.72	59 54.64	23 7 40.9	7 29.1	8.48804	8.7106	3.93	4.13
24 9 43.7	360	3 59 19.16	59 12.70	23 6 29.6	6 18.7	8.45219	8.6781	3.93	4.15
25 9 39.1	361	3 58 40.14	58 34.30	23 5 23.7	5 13.8	8.41271	8.6406	3.93	4.17
26 9 34.6	362	3 58 4.67	57 59.44	23 4 23.7	4 14.8	8.36908	8.5964	3.93	4.19
27 9 30.1	363	3 57 32.77	57 28.13	23 3 30.0	3 22.1	8.32049	8.5454	3.93	4.21
28 9 25.8	364	3 57 4.43	57 0.38	23 2 42.6	2 35.9	8.36579	8.4870	3.93	4.22
29 9 21.5	365	3 56 39.66	56 36.20	23 2 1.6	1 56.1	8.20308	8.4181	3.93	4.23
30 9 17.2	366	3 56 18.46	56 15.59	23 1 27.2	1 23.1	8.13000	8.3316	3.93	4.24
31 9 13.0	367	3 56 0.81	55 58.54	23 0 59.8	0 57.2	8.04249	8.2175	3.93	4.24
32 9 8.8	368	3 55 46.70	55 45.05	+23 0 39.7	0 38.5	−7.93338	−8.0552	+3.93	+4.25

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

	Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
			At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
	d h m	d	h m s	m s	° ′ ″	′ ″				
Jan.	0 20 31.4	0	15 12 53.36	13 20.44	−16 54 22.0	56 6.2	+8.4731	−9.0582	−2.90	+3.69
	1 20 28.2	1	15 13 36.01	14 2.90	16 57 5.6	58 48.5	8.4698	9.0527	2.91	3.69
	2 20 25.0	2	15 14 18.35	14 45.03	16 59 47.2	1 29.1	8.4662	9.0471	2.92	3.70
	3 20 21.7	3	15 15 0.31	15 26.80	17 2 26.7	4 7.3	8.4626	9.0415	2.93	3.70
	4 20 18.5	4	15 15 41.93	16 8.22	17 5 4.1	6 43.4	8.4591	9.0356	2.94	3.71
	5 20 15.2	5	15 16 23.20	16 49.28	17 7 39.4	9 17.4	8.4553	9.0299	2.95	3.71
	6 20 12.0	6	15 17 4.10	17 29.96	17 10 12.6	11 49.2	8.4513	9.0237	2.96	3.72
	7 20 8.7	7	15 17 44.62	18 10.26	17 12 43.6	14 18.8	8.4472	9.0175	2.97	3.72
	8 20 5.5	8	15 18 24.75	18 50.16	17 15 12.4	16 46.2	8.4430	9.0110	2.98	3.72
	9 20 2.2	9	15 19 4.49	19 29.66	17 17 39.0	19 11.4	8.4386	9.0045	2.99	3.73
	10 19 58.9	10	15 19 43.83	20 8.75	17 20 3.4	21 34.5	8.4341	8.9978	3.00	3.73
	11 19 55.6	11	15 20 22.76	20 47.44	17 22 25.6	23 55.4	8.4296	8.9911	3.00	3.74
	12 19 52.3	12	15 21 1.28	21 25.71	17 24 45.6	26 14.1	8.4250	8.9845	3.01	3.74
	13 19 49.0	13	15 21 39.38	22 3.55	17 27 3.4	28 30.5	8.4200	8.9770	3.02	3.74
	14 19 45.7	14	15 22 17.04	22 40.95	17 29 18.9	30 44.6	8.4150	8.9701	3 03	3.74
	15 19 42.4	15	15 22 54.26	23 17.91	17 31 32.2	32 56.5	8.4098	8.9626	3.03	3.74
	16 19 39.1	16	15 23 31.04	23 54.42	17 33 43.2	35 6.1	8.4046	8.9550	3.04	3.74
	17 19 35.8	17	15 24 7.37	24 30.47	17 35 51.9	37 13.4	8.3991	8.9476	3.04	3.74
	18 19 32.4	18	15 24 43.24	25 6.05	17 37 58.4	39 18.5	8.3934	8.9397	3.05	3.74
	19 19 29.1	19	15 25 18.64	25 41.16	17 40 2.6	41 21.2	8.3877	8.9317	3.05	3.74
	20 19 25.7	20	15 25 53.57	26 15.80	17 42 4.5	43 21.7	8.3818	8.9235	3.06	3.74
	21 19 22.4	21	15 26 28.02	26 49.96	17 44 4.1	45 19.9	8.3757	8.9152	3.06	3.70
	22 19 19.0	22	15 27 1.99	27 23.62	17 46 1.4	47 15.8	8.3696	8.9067	3.07	3.75
	23 19 15.6	23	15 27 35.47	27 56.78	17 47 56.4	49 9.4	8.3632	8.8980	3.08	3.75
	24 19 12.2	24	15 28 8.45	28 29.45	17 49 49.1	51 0.6	8.3565	8.8890	3 08	3.75
	25 19 8.8	25	15 28 40.92	29 1.60	17 51 39.4	52 49.5	8.3496	8.8800	3.09	3.75
	26 19 5.4	26	15 29 12.88	29 33.23	17 53 27.4	54 36.1	8.3426	8.8708	3.10	3.75
	27 19 2.0	27	15 29 44.31	30 4.33	17 55 13.2	56 20.3	8.3354	8.8611	3.11	3.75
	28 18 58.6	28	15 30 15.21	30 34.89	17 56 56.6	58 2.1	8.3278	8.8510	3.11	3.76
	29 18 55.1	29	15 30 45.57	31 4.91	17 58 37.6	59 41.6	8.3200	8.8407	3.12	3.76
	30 18 51.7	30	15 31 15.38	31 34.37	18 0 16.2	1 18.8	8.3120	8.8303	3.13	3.76
	31 18 48.3	31	15 31 44.64	32 3.27	18 1 52.5	2 53.5	8.3037	8.8197	3.14	3.76
Feb.	1 18 44.8	32	15 32 13.33	32 31.60	18 3 26.4	4 25.8	8.2951	8.8087	3.14	3.76
	2 18 41.3	33	15 32 41.45	32 59.35	18 4 57.8	5 55.7	8.2861	8.7973	3.15	3.76
	3 18 37.9	34	15 33 8.99	33 26.52	18 6 26.9	7 23.3	8.2770	8.7856	3.15	3.77
	4 18 34.4	35	15 33 35.94	33 53.09	18 7 53.6	8 48.5	8.2675	8.7736	3.16	3.77
	5 18 30.9	36	15 34 2.29	34 19.05	18 9 17.9	10 11.2	8.2574	8.7612	3.16	3.77
	6 18 27.4	37	15 34 28.03	34 44.40	18 10 39.8	11 31.5	8.2469	8.7485	3.17	3.77
	7 18 23.8	38	15 34 53.15	35 9.13	18 11 59.3	12 49.4	8.2362	8.7348	3.17	3.77
	8 18 20.3	39	15 35 17.66	35 33.24	18 13 16.3	14 4.9	8.2252	8.7210	3.18	3.77
	9 18 16.8	40	15 35 41.54	35 56.72	18 14 30.9	15 17.9	8.2140	8.7067	3.18	3.77
	10 18 13.2	41	15 36 4.79	36 19.56	18 15 43.0	16 28.5	8.2020	8.6920	3.19	3.77
	11 18 9.7	42	15 36 27.40	36 41.76	18 16 52.7	17 36.6	8.1899	8.6767	3.19	3.78
	12 18 6.1	43	15 36 49.37	37 3.31	18 17 59.9	18 42.3	8.1769	8.6608	3.20	3.78
	13 18 2.5	44	15 37 10.68	37 24.20	18 19 4.7	19 45.6	8.1634	8.6444	3.20	3.78
	14 17 58.9	45	15 37 31.33	37 44.43	18 20 7.0	20 46.4	8.1496	8.6276	3.20	3.78
	15 17 55.3	46	15 37 51.32	38 3.99	18 21 7.0	21 44.8	8.1351	8.6106	3.21	3.78
	16 17 51.7	47	15 38 10.64	38 22.87	18 22 4.5	22 40.7	8.1202	8.5917	3.21	3.78
	17 17 48.0	48	15 38 29.29	38 41.08	18 22 59.5	23 34.1	8.1044	8.5726	3.22	3.78
	18 17 44.3	49	15 38 47.26	38 58.60	18 23 52.0	24 25.0	8.0877	8.5521	3.22	3.78
	19 17 40.7	50	15 39 4.54	39 15.44	18 24 42.1	25 13.5	8.0706	8.5304	3.22	3.78
	20 17 37.0	51	15 39 21.13	39 31.58	18 25 29.8	25 59.5	8.0522	8.5077	3 23	3.78
	21 17 33.4	52	15 39 37.03	39 47.02	18 26 14.9	26 43.0	8.0331	8.4837	3.23	3.78
	22 17 29.7	53	15 39 52.22	40 1.76	18 26 57.5	27 24.0	8.0129	8.4586	3.23	3.78
	23 17 26.0	54	15 40 6.70	40 15.78	18 27 37.7	28 2.6	7.9915	8.4332	3.24	3.78
	24 17 22.3	55	15 40 20.47	40 29.09	18 28 15.5	28 38.8	7.9693	8.4045	3.24	3.78
	25 17 18.5	56	15 40 33.53	40 41.68	18 28 50.8	29 12.5	7.9454	8.3737	3 25	3.78
	26 17 14.8	57	15 40 45.87	40 53.55	18 29 23.6	29 43.7	7.9201	8.3406	3.25	3.78
	27 17 11.1	58	15 40 57.48	41 4.68	18 29 53.9	30 12.4	7.8923	8.3047	3.25	3.78
	28 17 7.3	59	15 41 8.35	41 15.07	18 30 21.7	30 38.6	7.8628	8.2656	3.26	3.78
	29 17 3.5	60	15 41 18.48	41 24.72	18 30 47.0	31 2.3	7.8310	8.2227	3.26	3.78
	30 16 59.7	61	15 41 27.87	41 33.62	−18 31 9.7	31 23.4	+7.7973	−8.1750	−3.26	+3.79

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Mar. 1 16 59.7	61	15 41 27.87	41 33.62	−18 31 9.7	31 23.4	+7.7973	−8.1750	−3.26	+3.79
2 16 55.9	62	15 41 36.52	41 41.77	18 31 30.0	31 42.1	7.7591	8.1204	3.26	3.79
3 16 52.1	63	15 41 44 41	41 49.17	18 31 47.8	31 58.3	7.7172	8.0630	3.27	3.79
4 16 48.3	64	15 41 51.54	41 55.81	18 32 3.2	32 12.0	7.6709	7.9907	3.27	3.79
5 16 44.5	65	15 41 57.91	42 1.67	18 32 16.1	32 23.3	7.6194	7.9080	3.27	3.79
6 16 40.6	66	15 42 3.52	42 6.78	18 32 26.4	32 32.0	7.5597	7.8030	3.27	3.79
7 16 36.8	67	15 42 8.36	42 11.12	18 32 34.3	32 38.2	7.4905	7.6644	3.27	3.79
8 16 32.9	68	15 42 12.43	42 14.69	18 32 39.7	32 42.0	7.4080	7.4596	3.28	3.79
9 16 29.1	69	15 42 15.73	42 17.48	18 32 42.6	32 43.2	7.3062	−7.0591	3.28	3.79
10 16 25.2	70	15 42 18.26	42 19.51	18 32 43.0	32 41.9	7.1730	+6.7710	3.28	3.79
11 16 21.2	71	15 42 20.02	42 20.76	18 32 40.9	32 38.2	6.9799	7.3666	3.28	3.78
12 16 17.3	72	15 42 21.01	42 21.24	18 32 36.3	32 32.0	+6.6234	7.6088	3.28	3.78
13 16 13.3	73	15 42 21.23	42 20.96	18 32 29.3	32 23.3	−6.0591	7.7659	3.28	3.78
14 16 9.3	74	15 42 20.68	42 19.90	18 32 19.7	32 12.2	6.8124	7.8750	3.28	3.78
15 16 5.4	75	15 42 19.35	42 18.07	18 32 7.7	31 58.6	7.0732	7.9622	3.28	3.78
16 16 1.4	76	15 42 17.26	42 15.48	18 31 53.3	31 42.6	7.2361	8.0347	3.27	3.78
17 15 57.4	77	15 42 14.40	42 12.12	18 31 36.5	31 24.2	7.3521	8.0969	3.27	3.78
18 15 53.4	78	15 42 10.78	42 8.00	18 31 17.2	31 3.3	7.4437	8.1534	3.27	3.78
19 15 49.4	79	15 42 6.40	42 3.13	18 30 55.5	30 40.0	7.5192	8.2024	3.27	3.77
20 15 45.4	80	15 42 1.26	41 57.49	18 30 31.3	30 14.3	7.5839	8.2464	3.27	3.77
21 15 41.4	81	15 41 55.36	41 51.10	18 30 4.7	29 46.2	7.6392	8.2856	3.27	3.77
22 15 37.4	82	15 41 48.72	41 43.97	18 29 35.8	29 15.7	7.6882	8.3216	3.27	3.77
23 15 33.3	83	15 41 41.32	41 36.08	18 29 4.5	28 42.8	7.7326	8.3548	3 26	3.77
24 15 29.2	84	15 41 33.17	41 27.44	18 28 30.7	28 7.5	7.7720	8.3850	3.26	3.77
25 15 25.1	85	15 41 24.28	41 18.07	18 27 54.6	27 29.8	7.8082	8.4127	3 26	3.76
26 15 21.0	86	15 41 14.65	41 7.95	18 27 16.1	26 49.8	7.8418	8.4387	3.26	3.76
27 15 16.9	87	15 41 4.27	40 57.09	18 26 35.4	26 7.5	7.8724	8.4638	3.26	3.76
28 15 12.8	88	15 40 53.17	40 45.51	18 25 52.3	25 22.9	7.9009	8.4880	3.26	3.76
29 15 8.7	89	15 40 41.34	40 33.21	18 25 6.8	24 35.9	7.9280	8.5105	3.25	3.75
30 15 4.5	90	15 40 28.78	40 20.19	18 24 19.0	23 46.6	7.9530	8.5313	3.25	3.75
31 15 0.4	91	15 40 15.50	40 6.45	18 23 28.9	22 55.0	7.9764	8.5509	3.25	3.75
Apr. 1 14 56.2	92	15 40 1.52	39 52.01	18 22 36.6	22 1.2	7.9981	8.5695	3.24	3.75
2 14 52.0	93	15 39 46.84	39 36.87	18 21 42.0	21 5.2	8.0191	8.5875	3.24	3.74
3 14 47.8	94	15 39 31.45	39 21.05	18 20 45.2	20 6.9	8.0384	8.6043	3.23	3.74
4 14 43.6	95	15 39 15.38	39 14.55	18 19 46.2	19 6.5	8.0565	8.6205	3.22	3.73
5 14 39.4	96	15 38 58.64	38 47.38	18 18 45.0	18 3.9	8.0741	8.6361	3.22	3.73
6 14 35.2	97	15 38 41.23	38 29.54	18 17 41.6	16 59.1	8.0906	8.6508	3.21	3.72
7 14 30.9	98	15 38 23.17	38 11.06	18 16 36.1	15 52.3	8.1060	8.6647	3.20	3.72
8 14 26.7	99	15 38 4.47	37 51.94	18 15 28.5	14 43.4	8.1212	8.6779	3.19	3.71
9 14 22.4	100	15 37 45.13	37 32.21	18 14 18.8	13 32.4	8.1350	8.6904	3.18	3.70
10 14 18.1	101	15 37 25.18	37 11.87	18 13 7.2	12 19.5	8.1481	8.7025	3.17	3.69
11 14 13.9	102	15 37 4.63	36 50.94	18 11 53.6	11 4.6	8.1605	8.7143	3.16	3.68
12 14 9.6	103	15 36 43.48	36 29.42	18 10 38.0	9 47.8	8.1728	8.7256	3.15	3.67
13 14 5.3	104	15 36 21.76	36 7.34	18 9 20.4	8 29.0	8.1842	8.7365	3.14	3.66
14 14 1.0	105	15 35 59.48	35 44.71	18 8 1.0	7 8.4	8.1948	8.7463	3.13	3.65
15 13 56.7	106	15 35 36.66	35 21.55	18 6 39.7	5 46.0	8.2053	8.7559	3.12	3.64
16 13 52.3	107	15 35 13.30	34 57.86	18 5 16.7	4 21.8	8.2149	8.7650	3.10	3.63
17 13 48.0	108	15 34 49.43	34 33.66	18 3 51.9	2 55.9	8.2240	8.7744	3.09	3.62
18 13 43.7	109	15 34 25.06	34 8.97	18 2 25.4	1 28.4	8.2329	8.7831	3.08	3.61
19 13 39.3	110	15 34 0.20	33 43.81	18 0 57.2	59 59.2	8.2415	8.7910	3.07	3.60
20 13 34.9	111	15 33 34.86	33 18.19	17 59 27.4	58 28.4	8.2493	8.7989	3.05	3.59
21 13 30.6	112	15 33 9.07	32 52.12	17 57 56.1	56 56.1	8.2568	8.8063	3 04	3.58
22 13 26.2	113	15 32 42.85	32 25.63	17 56 23.2	55 22.3	8.2637	8.8129	3.02	3.57
23 13 21.8	114	15 32 16.21	31 58.74	17 54 48.9	53 47.1	8.2705	8.8193	3.00	3.55
24 13 17.4	115	15 31 49.16	31 31.45	17 53 13.2	52 10.5	8.2770	8.8257	2.98	3.53
25 13 13.1	116	15 31 21.72	31 3.78	17 51 36.1	50 32.6	8.2830	8.8324	2.96	3.52
26 13 8.7	117	15 30 53.91	30 35.75	17 49 57.6	48 53.4	8.2888	8.8377	2 94	3.50
27 13 4.3	118	15 30 25.74	30 7.38	17 48 17.9	47 12.9	8.2942	8.8428	2.92	3.48
28 12 59.9	119	15 29 57.24	29 38.69	17 46 37.0	45 31.3	8.2988	8.8482	2.90	3.46
29 12 55.5	120	15 29 28.44	29 9.70	17 44 54.9	43 48.6	8.3034	8.8531	2.87	3.43
30 12 51.0	121	15 28 59.34	28 40.42	17 43 11.7	42 4.8	8.3077	8.8575	2.84	3.40
31 12 46.6	122	15 28 29.96	28 10.88	−17 41 27.6	40 20.0	−8.3118	+8.8615	−2.81	+3.37

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
May 1 12 46.6	122	15 28 29.96	28 10.88	−17 41 27.6	40 20.0	−8.3118	+8.8615	−2.81	+3.37
2 12 42.2	123	15 28 0.82	27 41.10	17 39 42.5	38 34.4	8.3151	8.8649	2.77	3.33
3 12 37.8	124	15 27 30.46	27 11.11	17 37 56.6	36 48.0	8.3185	8.8681	2.73	3.29
4 12 33.3	125	15 27 0.38	26 40.92	17 36 9.9	35 0.9	8.3213	8.8718	2.68	3.25
5 12 28.9	126	15 26 30.11	26 10.55	17 34 22.4	33 13.0	8.3240	8.8743	2.63	3.20
6 12 24.5	127	15 25 59.67	25 40.02	17 32 34.3	31 24.5	8.3261	8.8771	2.56	3.14
7 12 20.0	128	15 25 29.09	25 9.37	17 30 45.6	29 35.6	8.3282	8.8787	2.48	3.08
8 12 15.6	129	15 24 58.38	24 38.61	17 28 56.5	27 46.3	8.3297	8.8802	2.38	3.01
9 12 11.1	130	15 24 27.57	24 7.76	17 27 7.0	25 56.6	8.3311	8.8823	2.25	2.93
10 12 6.6	131	15 23 56.68	23 36.84	17 25 17.1	24 6.5	8.3319	8.8830	−2.08	+2.83
11 12 2.1	132	15 23 25.74	23 5.89	17 23 27.0	22 16.3	8.3325	8.8839		
12 11 57.7	133	15 22 54.77	22 34.92	17 21 36.7	20 26.0	8.3327	8.8848		
13 11 53.3	134	15 22 23.79	22 3.95	17 19 46.3	18 35.6	8.3329	8.8849		
14 11 48.9	135	15 21 52.81	21 33.00	17 17 55.8	16 45.1	8.3327	8.8847		
15 11 44.4	136	15 21 21.86	21 2.10	17 16 5.4	14 54.8	8.3320	8.8845	+2.07	
16 11 40.0	137	15 20 50.97	20 31.27	17 14 15.1	13 4.7	8.3309	8.8839	2.22	
17 11 35.5	138	15 20 20.16	20 0.53	17 12 25.0	11 14.8	8.3297	8.8830	2.34	−2.88
18 11 31.0	139	15 19 49.44	19 29.89	17 10 35.2	9 25.3	8.3283	8.8817	2.44	2.97
19 11 26.6	140	15 19 18.83	18 59.37	17 8 45.8	7 36.2	8.3266	8.8796	2.52	3.03
20 11 22.2	141	15 18 48.35	18 29.00	17 6 56.9	5 47.6	8.3248	8.8779	2.58	3.09
21 11 17.8	142	15 18 18.02	17 58.79	17 5 8.4	3 59.6	8.3222	8.8756	2.63	3.15
22 11 13.4	143	15 17 47.87	17 28.77	17 3 20.6	2 12.3	8.3196	8.8731	2.68	3.20
23 11 8.9	144	15 17 17.91	16 58.95	17 1 33.6	0 25.8	8.3167	8.8700	2.72	3.25
24 11 4.5	145	15 16 48.16	16 29.35	16 59 47.3	58 40.1	8.3135	8.8667	2.75	3.30
25 11 0.0	146	15 16 18.64	16 0.00	16 58 1.8	56 55.2	8.3099	8.8634	2.78	3.34
26 10 55.6	147	15 15 49.37	15 30.90	16 56 17.2	55 11.3	8.3061	8.8594	2.81	3.38
27 10 51.2	148	15 15 20.37	15 2.08	16 54 33.7	53 28.5	8.3019	8.8548	2.84	3.42
28 10 46.8	149	15 14 51.66	14 33.56	16 52 51.2	51 46.8	8.2975	8.8496	2.87	3.45
29 10 42.4	150	15 14 23.25	14 5.37	16 51 9.9	50 6.3	8.2927	8.8449	2.90	3.48
30 10 38.0	151	15 13 55.16	13 37.51	16 49 29.8	48 27.1	8.2877	8.8390	2.93	3.51
31 10 33.7	152	15 13 27.41	13 10.00	16 47 51.1	46 49.3	8.2822	8.8330	2.95	3.54
June 1 10 29.3	153	15 13 0.02	12 42.86	16 46 13.8	45 13.0	8.2764	8.8265	2.97	3.57
2 10 24.9	154	15 12 33.01	12 16.11	16 44 38.0	43 38.2	8.2699	8.8198	2.99	3.59
3 10 20.5	155	15 12 6.41	11 49.78	16 43 3.7	42 4.9	8.2631	8.8126	3.01	3.61
4 10 16.2	156	15 11 40.23	11 23.88	16 41 31.0	40 33.3	8.2561	8.8049	3.03	3.63
5 10 11.8	157	15 11 14.48	10 58.41	16 40 0.0	39 3.4	8.2488	8.7965	3.05	3.65
6 10 7.5	158	15 10 49.17	10 33.40	16 38 30.8	37 35.4	8.2409	8.7873	3.07	3.66
7 10 3.1	159	15 10 24.33	10 8.87	16 37 3.5	36 9.3	8.2325	8.7781	3.08	3.67
8 9 58.8	160	15 9 59.97	9 44.83	16 35 38.1	34 45.1	8.2240	8.7679	3.09	3.69
9 9 54.5	161	15 9 36.10	9 21.20	16 34 14.6	33 22.9	8.2149	8.7577	3.10	3.70
10 9 50.2	162	15 9 12.74	8 58.28	16 32 53.2	32 2.9	8.2052	8.7469	3.11	3.71
11 9 45.9	163	15 8 49.91	8 35.80	16 31 33.9	30 45.0	8.1948	8.7348	3.12	3.72
12 9 41.6	164	15 8 27.63	8 13.86	16 30 16.8	29 29.3	8.1840	8.7224	3.12	3.73
13 9 37.3	165	15 8 5.90	7 52.48	16 29 1.9	28 15.8	8.1732	8.7100	3.13	3.74
14 9 33.0	166	15 7 44.71	7 31.66	16 27 49.2	27 4.6	8.1617	8.6965	3.14	3.75
15 9 28.7	167	15 7 24.10	7 11.42	16 26 38.8	25 55.8	8.1493	8.6817	3.15	3.76
16 9 24.5	168	15 7 4.08	6 51.77	16 25 30.8	24 49.4	8.1365	8.6667	3.15	3.77
17 9 20.2	169	15 6 44.65	6 32.71	16 24 25.2	23 45.5	8.1235	8.6501	3.16	3.78
18 9 16.0	170	15 6 25.81	6 14.25	16 23 22.2	22 44.1	8.1095	8.6333	3.17	3.79
19 9 11.7	171	15 6 7.58	5 56.41	16 22 21.7	21 45.2	8.0950	8.6147	3.18	3.80
20 9 7.5	172	15 5 49.96	5 39.19	16 21 23.8	20 48.8	8.0798	8.5956	3.18	3.80
21 9 3.3	173	15 5 32.97	5 22.60	16 20 28.4	19 55.1	8.0635	8.5744	3.19	3.81
22 8 59.1	174	15 5 16.62	5 6.65	16 19 35.7	19 4.1	8.0465	8.5521	3.19	3.81
23 8 54.9	175	15 5 0.91	4 51.35	16 18 45.7	18 15.8	8.0285	8.5291	3.20	3.82
24 8 50.7	176	15 4 45.85	4 36.70	16 17 58.4	17 30.2	8.0101	8.5034	3.20	3.82
25 8 46.6	177	15 4 31.44	4 22.71	16 17 13.9	16 47.4	7.9904	8.4761	3.21	3.83
26 8 42.4	178	15 4 17.60	4 9.40	16 16 32.2	16 7.4	7.9690	8.4469	3.21	3.83
27 8 38.3	179	15 4 4.62	3 56.76	16 15 53.2	15 30.2	7.9464	8.4156	3.22	3.84
28 8 34.1	180	15 3 52.23	3 44.80	16 15 17.0	14 55.8	7.9225	8.3825	3.22	3.84
29 8 30.0	181	15 3 40.52	3 33.52	16 14 43.7	14 24.4	7.8970	8.3447	3.23	3.85
30 8 25.9	182	15 3 29.50	3 22.93	16 14 13.3	13 55.9	7.8702	8.3040	3.23	3.85
31 8 21.8	183	15 3 19.17	3 13.05	−16 13 45.8	13 30.2	−7.8403	+8.2566	+3.24	−3.86

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.		Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
			At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
	d	h m	d	h m s	m s	° ′ ″	′ ″				
July	1	8 21.8	183	15 3 19.17	3 13.05	−16 13 45.8	13 30.2	−7.8403	+8.2566	+3.24	−3.86
	2	8 17.7	184	15 3 9.55	3 3.88	16 13 21.3	13 7.5	7.8082	8.2033	3.24	3.86
	3	8 13.6	185	15 3 0.64	2 55.42	16 12 59.6	12 47.8	7.7739	8.1426	3.24	3.86
	4	8 9.6	186	15 2 52.44	2 47.66	16 12 41.1	12 31.1	7.7362	8.0720	3.24	3.86
	5	8 5.5	187	15 2 44.05	2 40.62	16 12 25.6	12 17.5	7.6953	7.9877	3.25	3.87
	6	8 1.5	188	15 2 38.17	2 34.30	16 12 13.1	12 6.9	7.6491	7.8830	3.25	3.87
	7	7 57.5	189	15 2 32.11	2 28.69	16 12 3.6	11 59.2	7.5975	7.7447	3.25	3.87
	8	7 53.4	190	15 2 26.77	2 23.80	16 11 57.0	11 54.6	7.5392	7.5406	3.25	3.87
	9	7 49.4	191	15 2 22.15	2 19.64	16 11 53.5	11 53.0	7.4705	+7.1316	3.25	3.87
	10	7 45.5	192	15 2 18.26	2 16.21	16 11 53.1	11 54.5	7.3881	−6.9023	3.25	3.87
	11	7 41.5	193	15 2 15.10	2 13.50	16 11 55.8	11 59.0	7.2872	7.4648	3.25	3.87
	12	7 37.5	194	15 2 12.67	2 11.51	16 12 1.5	12 6.5	7.1576	7.6989	3.25	3.87
	13	7 33.6	195	15 2 10.96	2 10.25	16 12 10.2	12 17.1	6.9735	7.8502	3.25	3.87
	14	7 29.6	196	15 2 9.97	2 9.72	16 12 21.9	12 30.7	−6.6340	7.9622	3.25	3.87
	15	7 25.7	197	15 2 9.71	2 9.91	16 12 36.6	12 47.3	+5.8416	8.0524	3.25	3.87
	16	7 21.8	198	15 2 10.17	2 10.82	16 12 54.4	13 7.0	6.7554	8.1272	3.25	3.87
	17	7 17.9	199	15 2 11.36	2 12.45	16 13 15.2	13 29.7	7.0201	8.1899	3.25	3.86
	18	7 14.0	200	15 2 13.26	2 14.80	16 13 39.0	13 55.4	7.1967	8.2447	3.24	3.86
	19	7 10.1	201	15 2 15.88	2 17.87	16 14 5.8	14 24.1	7.3151	8.2926	3.24	3.86
	20	7 6.2	202	15 2 19.21	2 21.65	16 14 35.5	14 55.7	7.4080	8.3358	3.24	3.86
	21	7 2.3	203	15 2 23.25	2 26.14	16 15 8.2	15 30.2	7.4856	8.3750	3.24	3.86
	22	6 58.5	204	15 2 28.01	2 31.35	16 15 43.8	16 7.7	7.5496	8.4104	3.24	3.86
	23	6 54.7	205	15 2 33.47	2 37.27	16 16 22.3	16 48.1	7.6062	8.4437	3.24	3.86
	24	6 50.9	206	15 2 39.65	2 43.89	16 17 3.8	17 31.4	7.6561	8.4746	3.24	3.85
	25	6 47.1	207	15 2 46.53	2 51.21	16 17 48.2	18 17.6	7.7013	8.5030	3.24	3.85
	26	6 43.3	208	15 2 54.12	2 59.23	16 18 35.5	19 6.7	7.7414	8.5295	3.24	3.85
	27	6 39.5	209	15 3 2.41	3 7.96	16 19 25.7	19 58.6	7.7781	8.5542	3.24	3.85
	28	6 35.7	210	15 3 11.40	3 17.39	16 20 18.6	20 53.3	7.8119	8.5772	3.24	3.84
	29	6 32.0	211	15 3 21.09	3 27.52	16 21 14.4	21 50.8	7.8435	8.5990	3.23	3.84
	30	6 28.2	212	15 3 31.48	3 38.34	16 22 12.9	22 51.2	7.8724	8.6198	3.23	3.84
	31	6 24.5	213	15 3 42.57	3 49.86	16 23 14.3	23 54.3	7.8995	8.6396	3.23	3.84
Aug.	1	6 20.8	214	15 3 54.34	4 2.07	16 24 18.5	25 0.2	7.9249	8.6581	3.23	3.83
	2	6 17.0	215	15 4 6.80	4 14.97	16 25 25.4	26 8.8	7.9491	8.6757	3.22	3.83
	3	6 13.3	216	15 4 19.95	4 28.55	16 26 35.0	27 20.1	7.9716	8.6925	3.22	3.82
	4	6 9.6	217	15 4 33.78	4 42.81	16 27 47.3	28 34.0	7.9930	8.7085	3.22	3.82
	5	6 6.0	218	15 4 48.28	4 57.74	16 29 2.2	29 50.5	8.0132	8.7236	3.22	3.81
	6	6 2.3	219	15 5 3.45	5 13.34	16 30 19.7	31 9.7	8.0325	8.7381	3.21	3.81
	7	5 58.6	220	15 5 19.30	5 29.61	16 31 39.8	32 31.5	8.0506	8.7522	3.21	3.80
	8	5 55.0	221	15 5 35.81	5 46.53	16 33 2.5	33 55.8	8.0678	8.7657	3.21	3.80
	9	5 51.3	222	15 5 52.97	6 4.11	16 34 27.7	35 22.5	8.0842	8.7781	3.20	3.79
	10	5 47.7	223	15 6 10.78	6 22.34	16 35 55.3	36 51.7	8.1001	8.7902	3.20	3.79
	11	5 44.1	224	15 6 29.24	6 41.22	16 37 25.4	38 23.3	8.1155	8.8021	3.19	3.78
	12	5 40.4	225	15 6 48.36	7 0.74	16 38 57.8	39 57.2	8.1303	8.8133	3.19	3.78
	13	5 36.8	226	15 7 8.11	7 20.89	16 40 32.6	41 33.6	8.1439	8.8243	3.19	3.77
	14	5 33.3	227	15 7 28.48	7 41.65	16 42 9.9	43 12.4	8.1572	8.8348	3.18	3.76
	15	5 29.7	228	15 7 49.47	8 3.03	16 43 49.5	44 53.4	8.1701	8.8445	3.18	3.75
	16	5 26.1	229	15 8 11.08	8 25.03	16 45 31.3	46 36.6	8.1823	8.8540	3.18	3.75
	17	5 22.6	230	15 8 33.30	8 47.64	16 47 15.3	48 22.0	8.1944	8.8632	3.18	3.74
	18	5 19.0	231	15 8 56.13	9 10.86	16 49 1.5	50 9.6	8.2058	8.8720	3.17	3.73
	19	5 15.5	232	15 9 19.56	9 34.67	16 50 49.8	51 59.3	8.2170	8.8804	3.17	3.72
	20	5 12.0	233	15 9 43.58	9 59.08	16 52 40.2	53 51.1	8.2276	8.8886	3.17	3.72
	21	5 8.5	234	15 10 8.20	10 24.09	16 54 32.7	55 44.9	8.2380	8.8966	3.17	3.71
	22	5 5.0	235	15 10 33.41	10 49.68	16 56 27.2	57 40.8	8.2482	8.9042	3.16	3.70
	23	5 1.5	236	15 10 59.21	11 15.85	16 58 23.8	59 38.7	8.2582	8.9117	3.16	3.69
	24	4 58.0	237	15 11 25.60	11 42.61	17 0 22.4	1 38.5	8.2676	8.9188	3.16	3.68
	25	4 54.5	238	15 11 52.56	12 9.94	17 2 22.8	3 40.1	8.2767	8.9256	3.15	3.67
	26	4 51.1	239	15 12 20.08	12 37.83	17 4 25.1	5 43.6	8.2858	8.9324	3.15	3.66
	27	4 47.6	240	15 12 48.17	13 6.28	17 6 29.3	7 48.9	8.2945	8.9388	3.14	3.65
	28	4 44.2	241	15 13 16.83	13 35.30	17 8 35.3	9 56.0	8.3030	8.9451	3.14	3.64
	29	4 40.7	242	15 13 46.04	14 4.87	17 10 43.0	12 4.9	8.3111	8.9510	3.13	3.63
	30	4 37.3	243	15 14 15.80	14 34.98	17 12 52.5	14 15.6	8.3193	8.9566	3.13	3.62
	31	4 33.8	244	15 14 46.10	15 5.64	−17 15 3.7	16 27.9	+8.3271	−8.9622	+3.12	−3.61

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Sept. 1 4 30.4	245	15 15 16.95	15 36.84	−17 17 16.5	18 41.8	+8.3348	−8.9674	+3.12	−3.60
2 4 27.0	246	15 15 48.34	16 8.57	17 19 31.0	20 57.3	8.3420	8.9725	3.11	3.59
3 4 23.6	247	15 16 20.25	16 40.83	17 21 47.0	23 14.4	8.3490	8.9775	3.11	3.58
4 4 20.3	248	15 16 52.68	17 13.60	17 24 4.6	25 33.0	8.3560	8.9823	3.10	3.57
5 4 16.9	249	15 17 25.63	17 46.89	17 26 23.6	27 53.1	8.3630	8.9870	3.10	3.56
6 4 13.5	250	15 17 59.10	18 20.69	17 28 44.1	30 14.6	8.3696	8.9914	3.09	3.55
7 4 10.1	251	15 18 33.07	18 54.99	17 31 6.1	32 37.5	8.3758	8.9957	3.09	3.54
8 4 6.8	252	15 19 7.53	19 29.78	17 33 29.4	35 1.7	8.3820	8.9997	3.08	3.52
9 4 3.4	253	15 19 42.48	20 5.06	17 35 54.0	37 27.2	8.3881	9.0037	3.08	3.51
10 4 0.1	254	15 20 17.93	20 40.82	17 38 19.9	39 53.9	8.3940	9.0075	3.07	3.49
11 3 56.8	255	15 20 53.85	21 17.06	17 40 47.0	42 21.8	8.3997	9.0110	3.07	3.48
12 3 53.4	256	15 21 30.24	21 53.77	17 43 15.3	44 50.9	8.4055	9.0146	3.06	3.46
13 3 50.1	257	15 22 7.10	22 30.94	17 45 44.8	47 21.2	8.4109	9.0179	3.06	3.44
14 3 46.8	258	15 22 44.42	23 8.56	17 48 15.4	49 52.5	8.4161	9.0210	3.05	3.43
15 3 43.5	259	15 23 22.19	23 46.64	17 50 47.1	52 24.8	8.4213	9.0240	3.05	3.41
16 3 40.2	260	15 24 0.41	24 25.17	17 53 19.8	54 58.2	8.4265	9.0269	3.04	3.39
17 3 36.9	261	15 24 39.08	25 4.14	17 55 53.4	57 32.6	8.4314	9.0295	3.04	3.38
18 3 33.7	262	15 25 18.19	25 43.55	17 58 28.1	0 7.9	8.4362	9.0320	3.03	3.36
19 3 30.4	263	15 25 57.73	26 23.39	18 1 3.6	2 44.1	8.4411	9.0345	3.03	3.35
20 3 27.1	264	15 26 37.70	27 3.65	18 3 40.0	5 21.2	8.4456	9.0369	3.02	3.33
21 3 23.9	265	15 27 18.09	27 44.34	18 6 17.3	7 59.0	8.4501	9.0392	3.02	3.31
22 3 20.6	266	15 27 58.90	28 25.46	18 8 55.3	10 37.6	8.4546	9.0414	3.01	3.29
23 3 17.4	267	15 28 40.14	29 6.99	18 11 34.1	13 16.9	8.4590	9.0434	3.01	3.27
24 3 14.2	268	15 29 21.80	29 48.98	18 14 13.6	15 57.0	8.4634	9.0453	3.00	3.24
25 3 10.9	269	15 30 3.86	30 31.26	18 16 53.8	18 37.7	8.4675	9.0471	3.00	3.22
26 3 7.7	270	15 30 46.32	31 14.00	18 19 34.7	21 19.0	8.4716	9.0489	2.99	3.19
27 3 4.5	271	15 31 29.18	31 57.14	18 22 16.2	24 0.9	8.4756	9.0505	2.99	3.16
28 3 1.3	272	15 32 12.44	32 40.67	18 24 58.2	26 43.4	8.4795	9.0520	2.98	3.13
29 2 58.1	273	15 32 56.08	33 24.58	18 27 40.8	29 26.4	8.4835	9.0533	2.97	3.10
30 2 54.9	274	15 33 40.11	34 8.87	18 30 23.9	32 9.8	8.4871	9.0545	2.97	3.07
Oct. 1 2 51.7	275	15 34 24.51	34 53.53	18 33 7.4	34 53.6	8.4909	9.0556	2.96	3.04
2 2 48.5	276	15 35 9.27	35 38.55	18 35 51.3	37 37.9	8.4945	9.0567	2.95	3.00
3 2 45.3	277	15 35 54.40	36 23.94	18 38 35.6	40 22.6	8.4979	9.0576	2.94	2.95
4 2 42.1	278	15 36 39.89	37 9.68	18 41 20.3	43 7.5	8.5012	9.0584	2.94	2.90
5 2 38.9	279	15 37 25.72	37 55.76	18 44 5.2	45 52.7	8.5044	9.0592	2.93	2.83
6 2 35.8	280	15 38 11.90	38 42.18	18 46 50.4	48 38.1	8.5076	9.0599	2.92	−2.76
7 2 32.7	281	15 38 58.41	39 28.94	18 49 35.8	51 23.7	8.5108	9.0604	2.91	
8 2 29.5	282	15 39 45.26	40 16.03	18 52 21.4	54 9.6	8.5139	9.0609	2.91	
9 2 26.4	283	15 40 32.44	41 3.45	18 55 7.2	56 55.7	8.5169	9.0615	2.90	
10 2 23.2	284	15 41 19.94	41 51.19	18 57 53.2	59 41.8	8.5198	9.0620	2.89	
11 2 20.1	285	15 42 7.76	42 39.23	19 0 30.2	2 28.0	8.5226	9.0620	2.88	
12 2 17.0	286	15 42 55.88	43 27.58	19 3 25.3	5 14.1	8.5253	9.0618	2.88	
13 2 13.8	287	15 43 44.31	44 16.22	19 6 11.3	8 0.1	8.5280	9.0616	2.87	
14 2 10.7	288	15 44 33.03	45 5.16	19 8 57.2	10 46.1	8.5306	9.0613	2.86	
15 2 7.6	289	15 45 22.05	45 54.39	19 11 43.1	13 32.1	8.5332	9.0610	2.85	
16 2 4.5	290	15 46 11.35	46 43.91	19 14 29.0	16 17.9	8.5358	9.0608	2.85	
17 2 1.4	291	15 47 0.94	47 33.71	19 17 14.7	19 3.6	8.5383	9.0605	2.84	
18 1 58.3	292	15 47 50.81	48 23.79	19 20 0.1	21 49.1	8.5407	9.0603	2.83	
19 1 55.2	293	15 48 40.96	49 14.15	19 22 45.5	24 34.5	8.5430	9.0599	2.83	+2.71
20 1 52.1	294	15 49 31.38	50 4.78	19 25 30.7	27 19.7	8.5454	9.0594	2.82	2.78
21 1 49.0	295	15 50 22.07	50 55.67	19 28 15.7	30 4.5	8.5477	9.0586	2.82	2.83
22 1 45.9	296	15 51 13.02	51 46.82	19 31 0.4	32 49.0	8.5498	9.0578	2.81	2.88
23 1 42.9	297	15 52 4.22	52 38.22	19 33 44.7	35 33.2	8.5519	9.0569	2.80	2.92
24 1 39.8	298	15 52 55.67	53 29.87	19 36 28.6	38 17.0	8.5540	9.0559	2.79	2.95
25 1 36.7	299	15 53 47.37	54 21.77	19 39 12.2	41 0.4	8.5562	9.0548	2.78	2.98
26 1 33.6	300	15 54 39.32	55 13.91	19 41 55.4	43 43.4	8.5582	9.0536	2.77	3.01
27 1 30.6	301	15 55 31.50	56 6.28	19 44 38.1	46 25.9	8.5602	9.0523	2.76	3.04
28 1 27.5	302	15 56 23.92	56 58.88	19 47 20.4	49 7.9	8.5620	9.0509	2.75	3.07
29 1 24.5	303	15 57 16.56	57 51.70	19 50 2.1	51 49.4	8.5638	9.0496	2.74	3.10
30 1 21.4	304	15 58 9.42	58 44.74	19 52 43.3	54 30.4	8.5656	9.0482	2.72	3.12
31 1 18.4	305	15 59 2.49	59 37.98	19 55 24.0	57 10.8	8.5673	9.0468	2.71	3.14
32 1 15.3	306	15 59 55.77	0 31.43	−19 58 4.1	59 50.6	+8.5690	−9.0452	+2.69	+3.16

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Nov. 1 1 15.3	306	15 59 55.77	0 31.43	−19 58 4.1	59 50.6	+8.5690	−9.0452	+2.69	+3.16
2 1 12.3	307	16 0 49.26	1 25.08	20 0 43.6	2 29.8	8.5707	9.0436	2.68	3.18
3 1 9.2	308	16 1 42.94	2 18.92	20 3 22.5	5 8.3	8.5722	9.0418	2.66	3.20
4 1 6.2	309	16 2 36.80	3 12.94	20 6 0.7	7 46.0	8.5736	9.0397	2.65	3.22
5 1 3.2	310	16 3 30.84	4 7.13	20 8 38.1	10 23.0	8.5750	9.0376	2.64	3.24
6 1 0.2	311	16 4 25.06	5 1.50	20 11 14.8	12 59.3	8.5764	9.0355	2.63	3.26
7 0 57.2	312	16 5 19.46	5 56.04	20 13 50.7	15 34.9	8.5778	9.0333	2.61	3.28
8 0 54.2	313	16 6 14.02	6 50.73	20 16 25.8	18 9.7	8.5791	9.0312	2.60	3.30
9 0 51.2	314	16 7 8.73	7 45.58	20 19 0.2	20 43.6	8.5803	9.0290	2.59	3.31
10 0 48.2	315	16 8 3.60	8 40.59	20 21 33.8	23 16.6	8.5816	9.0267	2.58	3.32
11 0 45.1	316	16 8 58.62	9 35.74	20 24 6.5	25 48.8	8.5827	9.0241	2.56	3.33
12 0 42.1	317	16 9 53.78	10 31.04	20 26 38.3	28 20.0	8.5837	9.0214	2.55	3.34
13 0 39.1	318	16 10 49.09	11 26.48	20 29 9.1	30 50.3	8.5848	9.0186	2.54	3.35
14 0 36.1	319	16 11 44.53	12 22.04	20 31 39.0	33 19.7	8.5859	9.0160	2.52	3.36
15 0 33.1	320	16 12 40.10	13 17.72	20 34 8.0	35 48.2	8.5869	9.0132	2.50	3.37
16 0 30.1	321	16 13 35.79	14 13.53	20 36 36.1	38 15.6	8.5879	9.0104	2.49	3.38
17 0 27.1	322	16 14 31.60	15 9.46	20 39 3.1	40 42.0	8.5888	9.0075	2.47	3.39
18 0 24.1	323	16 15 27.53	16 5.50	20 41 29.1	43 7.4	8.5897	9.0044	2.45	3.40
19 0 21.1	324	16 16 23.57	17 1.65	20 43 54.0	45 31.8	8.5905	9.0012	2.43	3.41
20 0 18.1	325	16 17 19.71	17 57.90	20 46 17.9	47 55.1	8.5913	8.9979	2.40	3.42
21 0 15.1	326	16 18 15.95	18 54.24	20 48 40.7	50 17.2	8.5920	8.9946	2.37	3.43
22 0 12.1	327	16 19 12.29	19 50.67	20 51 2.4	52 38.3	8.5928	8.9912	2.34	3.44
23 0 9.1	328	16 20 8.71	20 47.19	20 53 23.0	54 58.3	8.5934	8.9878	2.31	3.44
24 0 6.1	329	16 21 5.22	21 43.78	20 55 42.5	57 17.1	8.5939	8.9843	2.28	3.45
25 0 3.1	330	16 22 1.80	22 40.45	20 58 0.9	59 34.7	8.5945	8.9806	2.24	3.45
26 0 0.2	331	16 22 58.45	23 37.19	21 0 18.0	1 51.0	8.5951	8.9767	2.20	3.46
26 23 57.2	332	16 23 55.17	24 33.98	21 2 33.9	4 6.1	8.5956	8.9729	2.15	3.46
27 23 54.2	333	16 24 51.94	25 30.83	21 4 48.6	6 20.1	8.5960	8.9690	2.09	3.47
28 23 51.2	334	16 25 48.77	26 27.72	21 7 2.1	8 32.9	8.5963	8.9651	2.03	3.47
29 23 48.2	335	16 26 45.64	27 24.66	21 9 14.4	10 44.4	8.5966	8.9612	1.96	3.48
30 23 45.2	336	16 27 42.55	28 21.64	21 11 25.5	12 54.6	8.5969	8.9569	+1.87	3.49
Dec. 1 23 42.2	337	16 28 39.50	29 18.65	21 13 35.3	15 3.6	8.5972	8.9527		3.49
2 23 39.2	338	16 29 36.48	30 15.68	21 15 43.8	17 11.4	8.5974	8.9483		3.50
3 23 36.2	339	16 30 33.48	31 12.72	21 17 51.0	19 17.8	8.5975	8.9437		3.50
4 23 33.3	340	16 31 30.49	32 9.77	21 19 56.8	21 22.8	8.5976	8.9391		3.51
5 23 30.3	341	16 32 27.50	33 6.82	21 22 1.3	23 26.5	8.5976	8.9344		3.51
6 23 27.3	342	16 33 24.51	34 3.86	21 24 4.5	25 28.8	8.5975	8.9297		3.52
7 23 24.3	343	16 34 21.51	35 0.89	21 26 6.3	27 29.7	8.5974	8.9247		3.52
8 23 21.3	344	16 35 18.50	35 57.91	21 28 6.7	29 29.2	8.5973	8.9197		3.53
9 23 18.3	345	16 36 15.47	36 54.91	21 30 5.7	31 27.3	8.5972	8.9146		3.53
10 23 15.3	346	16 37 12.42	37 51.88	21 32 3.3	33 24.0	8.5970	8.9095		3.53
11 23 12.3	347	16 38 9.34	38 48.82	21 33 59.5	35 19.4	8.5968	8.9042		3.54
12 23 9.4	348	16 39 6.24	39 45.73	21 35 54.4	37 13.4	8.5965	8.8989	−1.91	3.54
13 23 6.4	349	16 40 3.10	40 42.60	21 37 47.9	39 5.9	8.5961	8.8934	1.98	3.54
14 23 3.4	350	16 40 59.91	41 39.41	21 39 39.9	40 57.0	8.5958	8.8880	2.04	3.54
15 23 0.4	351	16 41 56.67	42 36.17	21 41 30.5	42 46.7	8.5955	8.8825	2.09	3.55
16 22 57.4	352	16 42 53.38	43 32.87	21 43 19.6	44 34.9	8.5950	8.8769	2.14	3.55
17 22 54.4	353	16 43 50.03	44 29.51	21 45 7.3	46 21.6	8.5945	8.8708	2.18	3.55
18 22 51.4	354	16 44 46.61	45 26.07	21 46 53.5	48 6.8	8.5940	8.8646	2.22	3.55
19 22 48.5	355	16 45 43.11	46 22.56	21 48 38.2	49 50.5	8.5934	8.8583	2.25	3.55
20 22 45.5	356	16 46 39.54	47 18.97	21 50 21.4	51 32.7	8.5928	8.8521	2.28	3.55
21 22 42.5	357	16 47 35.88	48 15.28	21 52 3.1	53 13.5	8.5921	8.8459	2.31	3.55
22 22 39.5	358	16 48 32.13	49 11.50	21 53 43.4	54 52.8	8.5913	8.8396	2.34	3.56
23 22 36.5	359	16 49 28.28	50 7.61	21 55 22.2	56 30.7	8.5906	8.8330	2.37	3.56
24 22 33.5	360	16 50 24.33	51 3.62	21 56 59.6	58 7.0	8.5898	8.8263	2.40	3.56
25 22 30.5	361	16 51 20.27	51 59.51	21 58 35.4	59 41.9	8.5888	8.8195	2.43	3.56
26 22 27.5	362	16 52 16.09	52 55.28	22 0 9.7	1 15.2	8.5879	8.8126	2.46	3.56
27 22 24.5	363	16 53 11.78	53 50.91	22 1 42.5	2 47.1	8.5869	8.8058	2.49	3.56
28 22 21.5	364	16 54 7.34	54 46.40	22 3 13.9	4 17.5	8.5857	8.7989	2.52	3.56
29 22 18.5	365	16 55 2.75	55 41.74	22 4 43.8	5 46.4	8.5846	8.7917	2.55	3.56
30 22 15.4	366	16 55 58.01	56 36.93	22 6 12.2	7 13.7	8.5834	8.7843	2.57	3.56
31 22 12.4	367	16 56 53.12	57 31.96	−22 7 39.0	8 39.5	+8.5822	−8.7766	−2.59	+3.57

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Jan. 0 18 26.7	0	13 8 4.45	8 10.25	− 4 37 6.7	37 32.0	+7.8696	−8.527	−2.94	+3.75
1 18 22.9	1	13 8 14.94	8 20.54	4 37 53.0	38 17.9	7.8549	8.505	2.94	3.75
2 18 19.2	2	13 8 25.07	8 30.46	4 38 37.9	39 1.5	7.8392	8.483	2.94	3.75
3 18 15.4	3	13 8 34.83	8 40.02	4 39 20.4	39 42.7	7.8230	8.459	2.94	3.76
4 18 11.6	4	13 8 44.23	8 49.22	4 40 0.6	40 21.6	7.8061	8.433	2.95	3.76
5 18 7.8	5	13 8 53.26	8 58.05	4 40 38.5	40 58.2	7.7883	8.406	2.95	3.76
6 18 4.0	6	13 9 1.92	9 6.51	4 41 14.0	41 32.4	7.7695	8.377	2.95	3.76
7 18 0.2	7	13 9 10.20	9 14.59	4 41 47.1	42 4.2	7.7496	8.345	2.95	3.76
8 17 56.4	8	13 9 18.10	9 22.28	4 42 17.7	42 33.5	7.7287	8.310	2.96	3.76
9 17 52.6	9	13 9 25.62	9 29.58	4 42 45.9	43 0.4	7.7064	8.273	2.96	3.76
10 17 48.8	10	13 9 32.75	9 36.50	4 43 11.7	43 24.9	7.6830	8.233	2.96	3.76
11 17 45.0	11	13 9 39.50	9 43.04	4 43 35.1	43 47.0	7.6585	8.188	2.96	3.77
12 17 41.1	12	13 9 45.87	9 49.20	4 43 56.1	44 6.7	7.6323	8.138	2.96	3.77
13 17 37.3	13	13 9 51.85	9 54.97	4 44 14.7	44 23.9	7.6036	8.082	2.97	3.77
14 17 33.4	14	13 9 57.43	10 0.34	4 44 30.9	44 38.7	7.5728	8.016	2.97	3.77
15 17 29.6	15	13 10 2.62	10 5.32	4 44 44.6	44 51.0	7.5402	7.939	2.97	3.77
16 17 25.7	16	13 10 7.42	10 9.91	4 44 55.9	45 0.9	7.5049	7.846	2.97	3.77
17 17 21.9	17	13 10 11.83	10 14.10	4 45 4.8	45 8.5	7.4664	7.728	2.97	3.77
18 17 18.0	18	13 10 15.85	10 17.90	4 45 11.3	45 13.7	7.4244	7.562	2.97	3.77
19 17 14.1	19	13 10 19.48	10 21.31	4 45 15.3	45 16.4	7.3776	7.289	2.97	3.77
20 17 10.2	20	13 10 22.72	10 24.33	4 45 16.9	45 16.7	7.3245	−6.444	2.97	3.77
21 17 6.3	21	13 10 25.56	10 26.96	4 45 16.1	45 14.6	7.2641	+7.143	2.97	3.77
22 17 2.4	22	13 10 28.01	10 29.19	4 45 12.9	45 10.1	7.1938	7.485	2.98	3.77
23 16 58.5	23	13 10 30.06	10 31.02	4 45 7.3	45 3.1	7.1100	7.677	2.98	3.76
24 16 54.6	24	13 10 31.72	10 32.46	4 44 59.2	44 53.7	7.0060	7.810	2.98	3.76
25 16 50.7	25	13 10 32.98	10 33.51	4 44 48.7	44 41.9	6.8690	7.910	2.98	3.76
26 16 46.8	26	13 10 33.85	10 34.16	4 44 35.8	44 27.7	6.6677	7.989	2.98	3.76
27 16 42.9	27	13 10 34.32	10 34.41	4 44 20.6	44 11.2	+6.2730	8.056	2.98	3.76
28 16 38.9	28	13 10 34.39	10 34.26	4 44 3.0	43 52.3	−5.9556	8.116	2.98	3.76
29 16 35.0	29	13 10 34.06	10 33.71	4 43 43.0	43 31.0	6.5618	8.168	2.97	3.76
30 16 31.0	30	13 10 33.34	10 32.77	4 43 20.6	43 7.3	6.8054	8.214	2.97	3.75
31 16 27.0	31	13 10 32.22	10 31.44	4 42 55.9	42 41.3	6.9606	8.255	2.97	3.75
Feb. 1 16 23.1	32	13 10 30.71	10 29.71	4 42 28.8	42 12.9	7.0746	8.293	2.97	3.75
2 16 19.1	33	13 10 28.80	10 27.58	4 41 59.4	41 42.2	7.1649	8.327	2.97	3.75
3 16 15.1	34	13 10 26.50	10 25.06	4 41 27.6	41 9.2	7.2387	8.360	2.97	3.74
4 16 11.2	35	13 10 23.81	10 22.16	4 40 53.5	40 33.8	7.3018	8.389	2.97	3.74
5 16 7.2	36	13 10 20.73	10 18.87	4 40 17.1	39 56.1	7.3568	8.416	2.97	3.74
6 16 3.2	37	13 10 17.26	10 15.19	4 39 38.4	39 16.2	7.4057	8.442	2.96	3.73
7 15 59.2	38	13 10 13.40	10 11.12	4 38 57.5	38 34.1	7.4491	8.465	2.96	3.73
8 15 55.2	39	13 10 9.16	10 6.67	4 38 14.3	37 49.7	7.4880	8.488	2.96	3.72
9 15 51.2	40	13 10 4.54	10 1.84	4 37 28.9	37 3.1	7.5238	8.509	2.96	3.72
10 15 47.2	41	13 9 59.54	9 56.63	4 36 41.3	36 14.3	7.5568	8.529	2.96	3.72
11 15 43.2	42	13 9 54.16	9 51.05	4 35 51.5	35 23.3	7.5871	8.548	2.95	3.71
12 15 39.2	43	13 9 48.41	9 45.10	4 34 59.6	34 30.2	7.6151	8.566	2.95	3.71
13 15 35.1	44	13 9 42.29	9 38.78	4 34 5.5	33 35.0	7.6413	8.583	2.95	3.70
14 15 31.1	45	13 9 35.80	9 32.09	4 33 9.3	32 37.7	7.6658	8.599	2.95	3.70
15 15 27.0	46	13 9 28.95	9 25.04	4 32 11.0	31 38.3	7.6886	8.615	2.94	3.70
16 15 22.9	47	13 9 21.74	9 17.64	4 31 10.7	30 36.9	7.7099	8.629	2.94	3.69
17 15 18.9	48	13 9 14.18	9 9.89	4 30 8.5	29 33.5	7.7298	8.642	2.93	3.69
18 15 14.8	49	13 9 6.28	9 1.80	4 29 4.3	28 28.2	7.7488	8.656	2.93	3.68
19 15 10.7	50	13 8 58.03	8 53.36	4 27 58.1	27 21.0	7.7669	8.669	2.92	3.68
20 15 6.7	51	13 8 49.44	8 44.58	4 26 50.0	26 11.9	7.7841	8.681	2.92	3.67
21 15 2.6	52	13 8 40.51	8 35.47	4 25 40.0	25 0.9	7.8007	8.692	2.91	3.67
22 14 58.5	53	13 8 31.24	8 26.03	4 24 28.2	23 48.1	7.8164	8.703	2.90	3.66
23 14 54.4	54	13 8 21.64	8 16.26	4 23 14.6	22 33.5	7.8311	8.714	2.89	3.65
24 14 50.3	55	13 8 11.72	8 6.17	4 21 59.2	21 17.1	7.8449	8.724	2.89	3.64
25 14 46.2	56	13 8 1.49	7 55.76	4 20 42.0	19 59.0	7.8583	8.734	2.88	3.63
26 14 42.1	57	13 7 50.94	7 45.04	4 19 23.0	18 39.2	7.8712	8.744	2.87	3.62
27 14 38.0	58	13 7 40.08	7 34.01	4 18 2.4	17 17.7	7.8834	8.752	2.86	3.61
28 14 33.9	59	13 7 28.92	7 22.68	4 16 40.2	15 54.6	7.8951	8.761	2.85	3.60
29 14 29.8	60	13 7 17.46	7 11.06	4 15 16.4	14 30.0	7.9063	8.769	2.85	3.59
30 14 25.6	61	13 7 5.71	6 59.16	− 4 13 51.0	13 3.8	−7.9168	+8.777	−2.84	+3.58

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Mar. 1 14 25.6	61	13 7 5.71	6 59.16	− 4 13 51.0	13 3.8	−7.9168	+8.777	−2.84	+3.58
2 14 21.5	62	13 6 53.68	6 46.98	4 12 24.0	11 36.0	7.9269	8.785	2.83	3.56
3 14 17.4	63	13 6 41.37	6 34.52	4 10 55.5	10 6.7	7.9368	8.792	2.82	3.55
4 14 13.2	64	13 6 28.78	6 21.79	4 9 25.6	8 36.0	7.9463	8.798	2.81	3.53
5 14 9.1	65	13 6 15.92	6 8.79	4 7 54.4	7 4.0	7.9552	8.805	2.80	3.52
6 14 4.9	66	13 6 2.80	5 55.53	4 6 21.8	5 30.7	7.9637	8.811	2.79	3.50
7 14 0.8	67	13 5 49.43	5 42.02	4 4 47.9	3 56.2	7.9718	8.817	2.78	3.49
8 13 56.6	68	13 5 35.81	5 28.27	4 3 12.8	2 20.4	7.9795	8.823	2.76	3.48
9 13 52.4	69	13 5 21.96	5 14.29	4 1 36.5	0 43.4	7.9867	8.828	2.74	3.46
10 13 48.3	70	13 5 7.88	5 0.09	3 59 59.0	59 5.3	7.9938	8.833	2.73	3.44
11 13 44.1	71	13 4 53.57	4 45.67	3 58 20.4	57 26.2	8.0005	8.838	2.71	3.42
12 13 39.9	72	13 4 39.05	4 31.04	3 56 40.8	55 46.1	8.0067	8.842	2.69	3.40
13 13 35.7	73	13 4 24.32	4 16.21	3 55 0.3	54 5.1	8.0128	8.846	2.67	3.37
14 13 31.5	74	13 4 9.39	4 1.19	3 53 18.9	52 23.3	8.0183	8.850	2.65	3.34
15 13 27.4	75	13 3 54.28	3 45.98	3 51 36.6	50 40.6	8.0235	8.853	2.63	3.31
16 13 23.2	76	13 3 38.90	3 30.60	3 49 53.5	48 57.1	8.0285	8.857	2.61	3.28
17 13 19.0	77	13 3 23.53	3 15.05	3 48 9.6	47 12.8	8.0331	8.860	2.59	3.24
18 13 14.8	78	13 3 7.91	2 59.35	3 46 25.0	45 27.8	8.0374	8.863	2.56	3.20
19 13 10.6	79	13 2 52.14	2 43.50	3 44 39.7	43 42.2	8.0414	8.865	2.53	3.16
20 13 6.4	80	13 2 36.23	2 27.51	3 42 53.8	41 56.1	8.0452	8.868	2.50	3.12
21 13 2.2	81	13 2 20.18	2 11.39	3 41 7.4	40 9.5	8.0490	8.869	2.47	3.08
22 12 58.0	82	13 2 3.99	1 55.14	3 39 20.6	38 22.4	8.0526	8.871	2.44	3.03
23 12 53.8	83	13 1 47.67	1 38.76	3 37 33.3	36 34.9	8.0560	8.873	2.41	2.98
24 12 49.6	84	13 1 31.23	1 22.27	3 35 45.6	34 47.0	8.0589	8.874	2.37	2.93
25 12 45.4	85	13 1 14.69	1 5.68	3 33 57.6	32 58.9	8.0614	8.876	2.33	2.86
26 12 41.2	86	13 0 58.06	0 49.00	3 32 9.3	31 10.5	8.0636	8.877	2.29	2.79
27 12 37.0	87	13 0 41.35	0 32.25	3 30 20.8	29 21.9	8.0657	8.877	2.25	+2.68
28 12 32.8	88	13 0 24.56	0 15.43	3 28 32.1	27 33.2	8.0676	8.878	2.21	
29 12 28.5	89	12 60 7.70	59 58.54	3 26 43.3	25 44.4	8.0694	8.878	2.16	
30 12 24.3	90	12 59 50.77	59 41.59	3 24 54.5	23 55.6	8.0709	8.878	2.09	
31 12 20.1	91	12 59 33.79	59 24.59	3 23 5.7	22 6.9	8.0721	8.878	1.99	
Apr. 1 12 15.9	92	12 59 16.77	59 7.55	3 21 16.9	20 18.2	8.0731	8.878	1.86	
2 12 11.7	93	12 58 59.71	58 50.48	3 19 28.2	18 29.6	8.0739	8.877	−1.68	−2.68
3 12 7.5	94	12 58 42.63	58 33.39	3 17 39.7	16 41.2	8.0744	8.876		2.86
4 12 3.3	95	12 58 25.53	58 16.29	3 15 51.5	14 53.1	8.0746	8.875		2.96
5 11 59.1	96	12 58 8.43	57 59.20	3 14 3.6	13 5.4	8.0745	8.874		3.03
6 11 54.8	97	12 57 51.34	57 42.12	3 12 16.1	11 18.2	8.0743	8.872		3.08
7 11 50.6	98	12 57 34.26	57 25.05	3 10 29.0	9 31.4	8.0739	8.870	+1.68	3.12
8 11 46.4	99	12 57 17.20	57 8.01	3 8 42.4	7 45.1	8.0732	8.868	1.86	3.16
9 11 42.2	100	12 57 0.17	56 51.01	3 6 56.4	5 59.4	8.0722	8.866	1.98	3.19
10 11 38.0	101	12 56 43.19	56 34.06	3 5 11.0	4 14.3	8.0709	8.863	2.08	3.22
11 11 33.7	102	12 56 26.26	56 17.16	3 3 26.3	2 30.0	8.0695	8.860	2.16	3.25
12 11 29.5	103	12 56 9.39	56 0.33	3 1 42.3	0 46.5	8.0679	8.857	2.22	3.28
13 11 25.3	104	12 55 52.50	55 43.57	2 59 59.1	59 3.8	8.0659	8.854	2.28	3.30
14 11 21.1	105	12 55 35.87	55 26.90	2 58 16.7	57 21.9	8.0637	8.850	2.33	3.33
15 11 16.9	106	12 55 19.24	55 10.32	2 56 35.2	55 40.9	8.0612	8.846	2.37	3.35
16 11 12.7	107	12 55 2.71	54 53.84	2 54 54.6	54 0.8	8.0586	8.842	2.40	3.38
17 11 8.5	108	12 54 46.28	54 37.48	2 53 15.0	52 21.8	8.0557	8.838	2.43	3.40
18 11 4.3	109	12 54 29.97	54 21.24	2 51 36.4	50 43.8	8.0525	8.833	2.46	3.42
19 11 0.1	110	12 54 13.78	54 5.12	2 49 58.9	49 6.9	8.0491	8.828	2.49	3.44
20 10 55.9	111	12 53 57.72	53 49.13	2 48 22.5	47 31.2	8.0456	8.823	2.52	3.46
21 10 51.7	112	12 53 41.79	53 33.29	2 46 47.3	45 56.7	8.0418	8.818	2.55	3.48
22 10 47.5	113	12 53 26.01	53 17.59	2 45 13.3	44 23.4	8.0378	8.812	2.57	3.50
23 10 43.3	114	12 53 10.37	53 2.04	2 43 40.6	42 51.4	8.0336	8.806	2.59	3.51
24 10 39.1	115	12 52 54.89	52 46.65	2 42 9.1	41 20.7	8.0290	8.800	2.61	3.52
25 10 34.9	116	12 52 39.58	52 31.44	2 40 39.0	39 51.4	8.0241	8.793	2.63	3.53
26 10 30.7	117	12 52 24.45	52 16.41	2 39 10.4	38 23.5	8.0189	8.786	2.65	3.54
27 10 26.5	118	12 52 9.50	52 1.56	2 37 43.2	36 57.1	8.0135	8.778	2.67	3.55
28 10 22.4	119	12 51 54.74	51 46.90	2 36 17.5	35 32.2	8.0079	8.771	2.68	3.56
29 10 18.2	120	12 51 40.17	51 32.44	2 34 53.3	34 8.9	8.0020	8.763	2.70	3.57
30 10 14.0	121	12 51 25.81	51 18.20	2 33 30.7	32 47.2	7.9956	8.754	2.71	3.58
31 10 9.9	122	12 51 11.66	51 4.17	− 2 32 9.7	31 27.1	−7.9890	+8.746	+2.72	−3.59

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
May 1 10 9.9	122	12 51 11.66	51 4.17	− 2 32 9.7	31 27.1	−7.9890	+8.746	+2.72	−3.59
2 10 5.7	123	12 50 57.73	50 50.36	2 30 50.4	30 8.7	7.9821	8.736	2.73	3.60
3 10 1.6	124	12 50 44.02	50 36.78	2 29 32.8	28 52.0	7.9750	8.727	2.74	3.61
4 9 57.4	125	12 50 30.54	50 23.43	2 28 16.9	27 37.1	7.9674	8.717	2.76	3.62
5 9 53.2	126	12 50 17.30	50 10.32	2 27 2.8	26 24.0	7.9594	8.706	2.77	3.63
6 9 49.1	127	12 50 4.31	49 57.47	2 25 50.6	25 12.8	7.9509	8.695	2.78	3.64
7 9 44.9	128	12 49 51.58	49 44.88	2 24 40.2	24 3.4	7.9420	8.683	2.79	3.65
8 9 40 8	129	12 49 39.11	49 32.55	2 23 31.7	22 55.9	7.9330	8.671	2.80	3.66
9 9 36.7	130	12 49 26.90	49 20.48	2 22 25.1	21 50.3	7.9235	8.659	2.81	3.67
10 9 32.5	131	12 49 14.96	49 8.68	2 21 20.4	20 46.7	7.9137	8.646	2.82	3.68
11 9 28.4	132	12 49 3.29	48 57.16	2 20 17.7	19 45.1	7.9035	8.632	2.83	3.69
12 9 24.3	133	12 48 51.90	48 45.93	2 19 17.1	18 45.6	7.8926	8.617	2.84	3.70
13 9 20.2	134	12 48 40.80	48 34.99	2 18 18.6	17 48.2	7.8812	8.601	2.84	3.70
14 9 16.1	135	12 48 29.99	48 24.34	2 17 22.1	16 52.8	7.8694	8.586	2.85	3.71
15 9 12.0	136	12 48 19.48	48 13.99	2 16 27.7	15 59.5	7.8568	8.569	2.85	3.71
16 9 7.9	137	12 48 9.28	48 3.95	2 15 35.4	15 8.3	7.8438	8.551	2.86	3.71
17 9 3.8	138	12 47 59.38	47 54.22	2 14 45.2	14 19.3	7.8304	8.533	2.86	3.72
18 8 59.7	139	12 47 49.79	47 44.79	2 13 57.2	13 32.5	7.8166	8.513	2.87	3.72
19 8 55.6	140	12 47 40.50	47 35.67	2 13 11.4	12 47.8	7.8021	8.492	2.88	3.72
20 8 51.5	141	12 47 31.53	47 26.87	2 12 27.7	12 5.3	7.7866	8.471	2.88	3.73
21 8 47.4	142	12 47 22.88	47 18.40	2 11 46.2	11 25.0	7.7703	8.447	2.89	3.73
22 8 43.3	143	12 47 14.56	47 10.26	2 11 7.0	10 47.0	7.7531	8.423	2.89	3.73
23 8 39.3	144	12 47 6.57	47 2.45	2 10 30.0	10 11.2	7.7351	8.396	2.90	3.74
24 8 35.2	145	12 46 58.91	46 54.97	2 9 55.3	9 37.7	7.7167	8.367	2.90	3.74
25 8 31.2	146	12 46 51.57	46 47.81	2 9 22.9	9 6.5	7.6975	8.336	2.91	3.75
26 8 27.2	147	12 46 44.56	46 40.98	2 8 52.8	8 37.6	7.6767	8.304	2.91	3.75
27 8 23.1	148	12 46 37.89	46 34.49	2 8 24.9	8 10.9	7.6546	8.269	2.92	3.75
28 8 19.1	149	12 46 31.56	46 28.34	2 7 59.3	7 46.5	7.6309	8.230	2.92	3.76
29 8 15.0	150	12 46 25.58	46 22.54	2 7 36.0	7 24.5	7.6058	8.186	2.92	3.76
30 8 11.0	151	12 46 19.94	46 17.09	2 7 15.1	7 4.9	7.5792	8.136	2.93	3.76
31 8 7.0	152	12 46 14.65	46 11.99	2 6 56.6	6 47.7	7.5505	8.081	2.93	3.76
June 1 8 3.0	153	12 46 9.71	46 7.24	2 6 40.4	6 32.8	7.5192	8.018	2.93	3.76
2 7 59.0	154	12 46 5.13	46 2.85	2 6 26.6	6 20.2	7.4851	7.942	2.94	3.76
3 7 55.0	155	12 46 0.91	45 58.82	2 6 15.2	6 10.0	7.4480	7.850	2.94	3.76
4 7 51.0	156	12 45 57.05	45 55.15	2 6 6.2	6 2.2	7.4075	7.736	2.94	3.76
5 7 47.0	157	12 45 53.55	45 51.84	2 5 59.5	5 56.8	7.3628	7.582	2.95	3.76
6 7 43.1	158	12 45 50.41	45 48.89	2 5 55.2	5 53.8	7.3117	7.333	2.95	3.76
7 7 39.1	159	12 45 47.64	45 46.31	2 5 53.3	5 53.2	7.2541	+6.682	2.95	3.76
8 7 35.1	160	12 45 45.24	45 44.10	2 5 53.8	5 55.0	7.1880	−7.085	2.95	3.76
9 7 31.2	161	12 45 43.20	45 42 26	2 5 56.8	5 59.2	7.1100	7.465	2.95	3.76
10 7 27.2	162	12 45 41.53	45 40.79	2 6 2.2	6 5.9	7.0148	7.661	2.95	3.76
11 7 23.3	163	12 45 40.22	45 39.68	2 6 10.0	6 15.0	6.8928	7.793	2.95	3.76
12 7 19.4	164	12 45 39.28	45 38.93	2 6 20.1	6 26.4	6.7196	7.895	2.95	3.76
13 7 15.4	165	12 45 38.71	45 38.55	2 6 32.6	6 40.1	6.4327	7.978	2.95	3.76
14 7 11.5	166	12 45 38.50	45 38.54	2 6 47.5	6 56.2	−5.2396	8.047	2.95	3.76
15 7 7.6	167	12 45 38.66	45 38.89	2 7 4.7	7 14.7	+6.3795	8.106	2.95	3.76
16 7 3.7	168	12 45 39.19	45 39.61	2 7 24.3	7 35.6	6.6929	8.160	2.95	3.76
17 6 59.8	169	12 45 40.08	45 40.69	2 7 46.3	7 58.9	6.8710	8.206	2.95	3.75
18 6 55.9	170	12 45 41.33	45 42.14	2 8 10.6	8 24.5	6.9985	8.248	2.95	3.75
19 6 52.0	171	12 45 42.95	45 43.95	2 8 37.3	8 52.4	7.0969	8.286	2.95	3.75
20 6 48.1	172	12 45 44.93	45 46.13	2 9 6.3	9 22.6	7.1771	8.321	2.95	3.75
21 6 44.2	173	12 45 47.28	45 48.68	2 9 37.6	9 55.1	7.2456	8.353	2.94	3.75
22 6 40.3	174	12 45 50.00	45 51.59	2 10 11.2	10 30.0	7.3040	8.383	2.94	3.75
23 6 36.4	175	12 45 53.08	45 54.86	2 10 47.1	11 7.2	7.3549	8.410	2.94	3.75
24 6 32.5	176	12 45 56.52	45 58.49	2 11 25.3	11 46.6	7.4003	8.437	2.94	3.75
25 6 28.6	177	12 46 0.32	46 2.49	2 12 5.8	12 28.3	7.4415	8.461	2.94	3.75
26 6 24.7	178	12 46 4.48	46 6.85	2 12 48.5	13 12.2	7.4796	8.484	2.94	3.74
27 6 20.9	179	12 46 9.01	46 11.57	2 13 33.5	13 58.4	7.5147	8.506	2.94	3.74
28 6 17.0	180	12 46 13.90	46 16.65	2 14 20.8	14 46.9	7.5466	8.527	2.94	3.74
29 6 13.2	181	12 46 19.15	46 22.09	2 15 10.4	15 37.7	7.5760	8.547	2.94	3.73
30 6 9.4	182	12 46 24.75	46 27.88	2 16 2.2	16 30.7	7.6036	8.566	2.93	3.73
31 6 5.5	183	12 46 30.71	46 34.03	− 2 16 56.3	17 26.0	+7.6298	−8.584	+2.93	−3.73

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of *t* in Sidereal Minutes.		Log Coefficient of *t*².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
July 1 6 5.5	183	12 46 30.71	46 34.03	− 2 16 56.3	17 26.0	+7.6298	−8.584	+2.93	−3.73
2 6 1.7	184	12 46 37.03	46 40.54	2 17 52.6	18 23.5	7.6542	8.601	2.93	3.72
3 5 57.9	185	12 46 43.70	46 47.40	2 18 51.1	19 23.2	7.6770	8.617	2.93	3.72
4 5 54.1	186	12 46 50.72	46 54.61	2 19 51.7	20 25.0	7.6987	8.632	2.92	3.72
5 5 50.3	187	12 46 58.09	47 2.17	2 20 54.5	21 28.9	7.7193	8.647	2.92	3.71
6 5 46.5	188	12 47 5.81	47 10.08	2 21 59.5	22 34.9	7.7393	8.662	2.92	3.71
7 5 42.7	189	12 47 13.89	47 18.34	2 23 6.6	23 43.1	7.7584	8.675	2.91	3.70
8 5 38.9	190	12 47 22.32	47 26.94	2 24 15.9	24 53.5	7.7761	8.689	2.91	3.70
9 5 35.1	191	12 47 31.09	47 35.89	2 25 27.2	26 6.0	7.7930	8.701	2.90	3.70
10 5 31.3	192	12 47 40.20	47 45.18	2 26 40.6	27 20.5	7.8089	8.713	2.90	3.69
11 5 27.5	193	12 47 49.64	47 54.80	2 27 56.0	28 37.0	7.8241	8.725	2.90	3.69
12 5 23.8	194	12 47 59.41	48 4.75	2 29 13.4	29 55.5	7.8390	8.736	2.89	3.68
13 5 20.0	195	12 48 9.52	48 15.04	2 30 32.9	31 16.1	7.8534	8.747	2.89	3 68
14 5 16.3	196	12 48 19.96	48 25.66	2 31 54.4	32 38.7	7.8671	8.758	2.88	3.68
15 5 12.6	197	12 48 30.73	48 36.61	2 33 17.9	34 3.2	7.8805	8.768	2.88	3.67
16 5 8.8	198	12 48 41.83	48 47.88	2 34 43.3	35 29.6	7.8932	8.778	2.88	3.67
17 5 5.1	199	12 48 53.25	48 59.47	2 36 10.6	36 57.9	7.9052	8.787	2.87	3.66
18 5 1.4	200	12 49 4.98	49 11.37	2 37 39.7	38 28.0	7.9166	8.796	2.87	3.66
19 4 57.6	201	12 49 17.02	49 23.58	2 39 10.7	40 0.0	7.9280	8.805	2.87	3.66
20 4 53.9	202	12 49 29.38	49 36.11	2 40 43.6	41 33.9	7.9392	8.814	2.86	3.65
21 4 50.2	203	12 49 42.06	49 48.96	2 42 18.4	43 9.7	7.9500	8.823	2.86	3.65
22 4 46.5	204	12 49 55.05	50 2.12	2 43 55.1	44 47.4	7.9604	8.831	2.86	3.64
23 4 42.8	205	12 50 8.35	50 15.59	2 45 33.6	46 26.9	7.9705	8.839	2.86	3.64
24 4 39.1	206	12 50 21.96	50 29.36	2 47 13.8	48 8.1	7.9801	8.846	2.85	3.63
25 4 35.4	207	12 50 35.86	50 43.43	2 48 55.8	49 51.1	7.9893	8.854	2.85	3.63
26 4 31.7	208	12 50 50.06	50 57.79	2 50 39.6	51 35.8	7.9985	8.861	2.85	3.62
27 4 28.0	209	12 51 4.56	51 12.45	2 52 25.1	53 22.2	8.0075	8.868	2.84	3.61
28 4 24.3	210	12 51 19.36	51 27.41	2 54 12.3	55 10.3	8.0161	8.875	2.84	3.61
29 4 20.6	211	12 51 34.45	51 42.66	2 56 1.2	57 0.2	8.0245	8.882	2.84	3.60
30 4 16.9	212	12 51 49.83	51 58.19	2 57 51.8	58 51.7	8.0325	8.889	2.83	3.60
31 4 13.2	213	12 52 5.49	52 14.01	2 59 44.0	60 44.8	8.0404	8.895	2.83	3.59
Aug. 1 4 9.6	214	12 52 21.44	52 30.11	3 1 37.8	2 39.5	8.0482	8.901	2.83	3.59
2 4 5.9	215	12 52 37.67	52 46.49	3 3 33.2	4 35.8	8.0557	8.907	2.82	3.58
3 4 2.2	216	12 52 54.18	53 3.15	3 5 30.2	6 33.7	8.0631	8.913	2.82	3.58
4 3 58.6	217	12 53 10.97	53 20.09	3 7 28.7	8 33.1	8.0702	8.918	2.82	3.57
5 3 54.9	218	12 53 28.03	53 37.30	3 9 28.7	10 34.0	8.0770	8.924	2.81	3.57
6 3 51.3	219	12 53 45.36	53 54.78	3 11 30.2	12 36.3	8.0838	8.929	2.81	3.56
7 3 47.7	220	12 54 2.96	54 12.52	3 13 33.3	14 40.1	8.0903	8.934	2.80	3.56
8 3 44.0	221	12 54 20.82	54 30.52	3 15 37.8	16 45.4	8.0965	8.939	2.80	3.55
9 3 40.4	222	12 54 38.93	54 48 77	3 17 43.7	18 52.1	8.1025	8.944	2.79	3.54
10 3 36.8	223	12 54 57.29	55 7.27	3 19 51.0	21 0.1	8.1085	8.949	2.79	3.54
11 3 33.2	224	12 55 15.90	55 26.02	3 21 59.6	23 9.4	8.1142	8.953	2.78	3.53
12 3 29.6	225	12 55 34.75	55 45.01	3 24 9.5	25 20.0	8.1198	8.958	2.77	3.52
13 3 26.0	226	12 55 53.85	56 4.24	3 26 20.8	27 32.0	8.1253	8.962	2.77	3.51
14 3 22.4	227	12 56 13.18	56 23.70	3 28 33.4	29 45.3	8.1306	8.966	2.76	3.50
15 3 18.8	228	12 56 32.75	56 43.40	3 30 47.2	31 59.8	8.1359	8.970	2.75	3.49
16 3 15.2	229	12 56 52.56	57 3.34	3 33 2.3	34 15.6	8.1410	8.974	2.74	3.48
17 3 11.6	230	12 57 12.69	57 23.51	3 35 18.6	36 32.6	8.1459	8.978	2.74	3.47
18 3 8.0	231	12 57 32.86	57 43.90	3 37 36.1	38 50.7	8.1506	8.982	2.73	3.46
19 3 4.4	232	12 57 53.34	58 4.50	3 39 54.7	41 10.0	8.1553	8.985	2.73	3.45
20 3 0.8	233	12 58 14.04	58 25.32	3 42 14.5	43 30.4	8.1599	8.989	2.72	3.44
21 2 57.2	234	12 58 34.96	58 46.36	3 44 35.4	45 51.9	8.1645	8.992	2.71	3.42
22 2 53.6	235	12 58 56.10	59 7.62	3 46 57.4	48 14.5	8.1689	8.996	2.71	3.41
23 2 50.0	236	12 59 17.45	59 29.09	3 49 20.5	50 38.2	8.1731	8.999	2.70	3.40
24 2 46.4	237	12 59 39.00	59 50.76	3 51 44.7	53 3.0	8.1771	9.002	2.69	3.39
25 2 42.9	238	13 0 0.75	0 12.62	3 54 9.9	55 28.8	8.1811	9.005	2.69	3.38
26 2 39.3	239	13 0 22.70	0 34.68	3 56 36 0	57 55.6	8.1850	9.008	2.68	3.37
27 2 35.7	240	13 0 44.85	0 56.94	3 59 3.1	60 23.3	8.1890	9.011	2.67	3.36
28 2 32.2	241	13 1 7.20	1 19.40	4 1 31.2	2 51.9	8.1928	9.014	2.67	3.35
29 2 28.6	242	13 1 29.74	1 42.05	4 4 0.2	5 21.4	8.1964	9.016	2.66	3.33
30 2 25.1	243	13 1 52.46	2 4.88	4 6 30.1	7 51.8	8.1999	9.019	2.65	3.32
31 2 21.5	244	13 2 15.37	2 27.89	− 4 9 0.8	10 23.0	+8.2034	−9.021	+264	−3.30

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Sept. 1 2 18.0	245	13 2 38.46	2 51.08	− 4 11 32.4	12 55.1	+8.2068	−9.024	+2.63	−3.29
2 2 14.5	246	13 3 1.73	3 14.45	4 14 4.9	15 28.1	8.2101	9.026	2.62	3.27
3 2 10.9	247	13 3 25.18	3 38.00	4 16 38.2	18 1.9	8.2133	9.028	2.61	3.26
4 2 7.4	248	13 3 48.79	4 1.71	4 19 12.2	20 36.4	8.2162	9.030	2.60	3.25
5 2 3.9	249	13 4 12.56	4 25.57	4 21 47.0	23 11.6	8.2191	9.032	2.59	3.23
6 2 0.3	250	13 4 36.49	4 49.59	4 24 22.5	25 47.4	8.2220	9.034	2.58	3.22
7 1 56.8	251	13 5 0.58	5 13.77	4 26 58.6	28 23.9	8.2248	9.036	2.57	3.20
8 1 53.3	252	13 5 24.82	5 38.10	4 29 35.4	31 1.1	8.2274	9.038	2.56	3.19
9 1 49.8	253	13 5 49.20	6 2.57	4 32 12.8	33 38.9	8.2300	9.040	2.55	3.17
10 1 46.3	254	13 6 13.73	6 27.18	4 34 50.9	36 17.3	8.2325	9.041	2.53	3.16
11 1 42.8	255	13 6 38.40	6 51.93	4 37 29.5	38 56.3	8.2349	9.043	2.52	3.14
12 1 39.3	256	13 7 3.20	7 16.82	4 40 8.6	41 35.8	8.2373	9.044	2.51	3.13
13 1 35.7	257	13 7 28.14	7 41.84	4 42 48.2	44 15.7	8.2397	9.045	2.50	3.11
14 1 32.2	258	13 7 53.21	8 6.99	4 45 28.3	46 56.1	8.2419	9.047	2.48	3.09
15 1 28.7	259	13 8 18.41	8 32.26	4 48 8.9	49 37.0	8.2441	9.048	2.46	3.08
16 1 25.2	260	13 8 43.73	8 57.65	4 50 50.0	52 18.4	8.2461	9.049	2.45	3.06
17 1 21.7	261	13 9 9.17	9 23.16	4 53 31.6	55 0.3	8.2481	9.051	2.43	3.04
18 1 18.2	262	13 9 34.72	9 48.79	4 56 13.6	57 42.6	8.2500	9.052	2.41	3.01
19 1 14.7	263	13 10 0.39	10 14.53	4 58 56.0	60 25.2	8.2519	9.053	2.40	2.98
20 1 11.2	264	13 10 26.17	10 40.37	5 1 38.7	3 8.1	8.2538	9.053	2.38	2.95
21 1 7.7	265	13 10 52.05	11 6.31	5 4 21.7	5 51.3	8.2554	9.054	2.36	2.91
22 1 4.2	266	13 11 18.03	11 32.35	5 7 5.0	8 34.8	8.2571	9.055	2.34	2.86
23 1 0.7	267	13 11 44.11	11 58.49	5 9 48.5	11 18.6	8.2588	9.056	2.32	2.81
24 0 57.2	268	13 12 10.29	12 24.73	5 12 32.3	14 2.6	8.2604	9.057	2.30	2.75
25 0 53.7	269	13 12 36.57	12 51.07	5 15 16.4	16 46.8	8.2619	9.057	2.28	−2.68
26 0 50.2	270	13 13 2.93	13 17.49	5 18 0.7	19 31.2	8.2632	9.057	2.26	
27 0 46.7	271	13 13 29.37	13 43.98	5 20 45.1	22 15.8	8.2646	9.058	2.24	
28 0 43.2	272	13 13 55.89	14 10.55	5 23 29.7	25 0.5	8.2658	9.058	2.22	
29 0 39.7	273	13 14 22.48	14 37.19	5 26 14.4	27 45.3	8.2670	9.058	2.19	
30 0 36.2	274	13 14 49.15	15 3.90	5 28 59.2	30 30.2	8.2682	9.059	2.16	
Oct. 1 0 32.7	275	13 15 15.89	15 30.68	5 31 44.0	33 15.1	8.2693	9.059	2.13	
2 0 29.2	276	13 15 42.69	15 57.52	5 34 28.9	36 0.1	8.2702	9.059	2.10	
3 0 25.7	277	13 16 9.54	16 24.41	5 37 13.8	38 45.1	8.2711	9.059	2.07	
4 0 22.3	278	13 16 36.45	16 51.35	5 39 58.8	41 30.1	8.2719	9.059	2.03	
5 0 18.8	279	13 17 3.40	17 18.34	5 42 43.7	44 15.0	8.2726	9.059	1.99	
6 0 15.3	280	13 17 30.40	17 45.37	5 45 28.5	46 59.8	8.2733	9.058	1.95	
7 0 11.8	281	13 17 57.44	18 12.44	5 48 13.2	49 44.5	8.2740	9.058	1.91	
8 0 8.3	282	13 18 24.52	18 39.55	5 50 57.8	52 29.1	8.2746	9.058	1.88	
9 0 4.9	283	13 18 51.64	19 6.70	5 53 42.3	55 13.5	8.2752	9.058	1.83	+2.68
10 0 1.4	284	13 19 18.79	19 33.87	5 56 26.6	57 57.7	8.2756	9.057	1.78	2.80
10 23 57.9	285	13 19 45.96	20 1.06	5 59 10.7	60 41.7	8.2759	9.056	1.73	2.86
11 23 54.4	286	13 20 13.15	20 28.27	6 1 54.5	3 25.5	8.2762	9.056	+1.68	2.90
12 23 50.9	287	13 20 40.36	20 55.50	6 4 38.1	6 9.0	8.2764	9.055		2.93
13 23 47.5	288	13 21 7.58	21 22.73	6 7 21.5	8 52.3	8.2766	9.054		2.96
14 23 44.0	289	13 21 34.81	21 49.97	6 10 4.6	11 35.3	8.2767	9.054		2.99
15 23 40.5	290	13 22 2.04	22 17.21	6 12 47.3	14 17.9	8.2767	9.053		3.01
16 23 37.0	291	13 22 29.27	22 44.45	6 15 29.7	17 0.1	8.2768	9.052		3.03
17 23 33.5	292	13 22 56.51	23 11.69	6 18 11.7	19 41.9	8.2768	9.051		3.05
18 23 30.1	293	13 23 23.74	23 38.93	6 20 53.3	22 23.3	8.2766	9.050		3.07
19 23 26.6	294	13 23 50.96	24 6.15	6 23 34.5	25 4.3	8.2764	9.048		3.08
20 23 23.1	295	13 24 18.17	24 33.36	6 26 15.3	27 44.9	8.2762	9.047	−1.68	3.10
21 23 19.6	296	13 24 45.36	25 0.55	6 28 55.6	30 25.0	8.2759	9.046	1.74	3.11
22 23 16.1	297	13 25 12.53	25 27.71	6 31 35.5	33 4.6	8.2756	9.045	1.80	3.13
23 23 12.7	298	13 25 39.68	25 54.85	6 34 14.8	35 43.7	8.2752	9.043	1.86	3.15
24 23 9.2	299	13 26 6.80	26 21.96	6 36 53.6	38 22.2	8.2747	9.042	1.92	3.16
25 23 5.7	300	13 26 33.89	26 49.04	6 39 31.8	41 0.1	8.2741	9.040	1.98	3.18
26 23 2.2	301	13 27 0.94	27 16.08	6 42 9.4	43 37.4	8.2735	9.038	2.03	3.19
27 22 58.7	302	13 27 27.95	27 43.07	6 44 46.4	46 14.1	8.2728	9.037	2.08	3.21
28 22 55.3	303	13 27 54.92	28 10.02	6 47 22.8	48 50.2	8.2720	9.035	2.12	3.22
29 22 51.8	304	13 28 21.83	28 36.91	6 49 58.5	51 25.6	8.2711	9.033	2.16	3.23
30 22 48.3	305	13 28 48.68	29 3.74	6 52 33.5	54 0.2	8.2701	9.031	2.19	3.25
31 22 44.8	306	13 29 15.47	29 30.50	− 6 55 7.7	56 34.0	+8.2690	−9.029	−2.22	+3.26

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Nov. 1 22 41.3	307	13 29 42.19	29 57.19	− 6 57 41.2	59 7.1	+8.2680	−9.027	−2.24	+3.28
2 22 37.8	308	13 30 8.85	30 23.81	7 0 13.9	1 39.4	8.2668	9.024	2.26	3.29
3 22 34.3	309	13 30 35.43	30 50.36	7 2 45.8	4 10.9	8.2655	9.022	2.28	3.30
4 22 30.8	310	13 31 1.93	31 16.83	7 5 16.9	6 41.6	8.2642	9.020	2.30	3.32
5 22 27.4	311	13 31 28.35	31 43.21	7 7 47.1	9 11.4	8.2628	9.017	2.32	3.33
6 22 23.9	312	13 31 54.68	32 9.49	7 10 16.5	11 40.3	8.2613	9.015	2.34	3.35
7 22 20.4	313	13 32 20.91	32 35.67	7 12 45.0	14 8.3	8.2596	9.012	2.36	3.36
8 22 16.9	314	13 32 47.04	33 1.75	7 15 12.5	16 35.3	8.2580	9.009	2.38	3.37
9 22 13.4	315	13 33 13.08	33 27.74	7 17 39.1	19 1.4	8.2564	9.006	2.40	3.38
10 22 9.9	316	13 33 39.02	33 53.63	7 20 4.8	21 26.6	8.2547	9.004	2.42	3.39
11 22 6.4	317	13 34 4.85	34 19.41	7 22 29.5	23 50.8	8.2528	9.001	2.44	3.40
12 22 2.9	318	13 34 30.56	34 45.07	7 24 53.2	26 13.9	8.2507	8.998	2.45	3.41
13 21 59.4	319	13 34 56.15	35 10.60	7 27 15.8	28 35.9	8.2487	8.994	2.46	3.42
14 21 55.9	320	13 35 21.62	35 36.00	7 29 37.4	30 56.9	8.2466	8.991	2.48	3.43
15 21 52.4	321	13 35 46.97	36 1.28	7 31 57.9	33 16.8	8.2445	8.988	2.49	3.44
16 21 48.9	322	13 36 12.19	36 26.43	7 34 17.3	35 35.6	8.2423	8.984	2.51	3.45
17 21 45.4	323	13 36 37.28	36 51.45	7 36 35.6	37 53.3	8.2399	8.981	2.52	3.46
18 21 41.8	324	13 37 2.23	37 16.33	7 38 52.8	40 9.9	8.2375	8.977	2.53	3.46
19 21 38.3	325	13 37 27.04	37 41.06	7 41 8.8	42 25.3	8.2349	8.973	2.54	3.47
20 21 34.8	326	13 37 51.70	38 5.64	7 43 23.5	44 39.4	8.2323	8.969	2.56	3.48
21 21 31.2	327	13 38 16.21	38 30.07	7 45 37.0	46 52.2	8.2296	8.965	2.57	3.48
22 21 27.7	328	13 38 40.57	38 54.34	7 47 49.3	49 3.8	8.2268	8.961	2.59	3.49
23 21 24.1	329	13 39 4.76	39 18.45	7 50 0.3	51 14.1	8.2238	8.957	2.60	3.50
24 21 20.6	330	13 39 28.79	39 42.39	7 52 10.1	53 23.2	8.2209	8.953	2.61	3.51
25 21 17.1	331	13 39 52.65	40 6.16	7 54 18.6	55 31.0	8.2178	8.948	2.63	3.51
26 21 13.5	332	13 40 16.34	40 29.75	7 56 25.7	57 37.4	8.2145	8.943	2.64	3.52
27 21 10.0	333	13 40 39.85	40 53.16	7 58 31.4	59 42.4	8.2111	8.939	2.65	3.52
28 21 6.4	334	13 41 3.17	41 16.38	8 0 35.8	1 46.0	8.2076	8.934	2.66	3.53
29 21 2.9	335	13 41 26.30	41 39.40	8 2 38.8	3 48.2	8.2039	8.929	2.67	3.54
30 20 59.3	336	13 41 49.23	42 2.22	8 4 40.4	5 48.9	8.2001	8.924	2.68	3.54
Dec. 1 20 55.7	337	13 42 11.96	42 24.84	8 6 40.5	7 48.2	8.1963	8.918	2.69	3.55
2 20 52.2	338	13 42 34.49	42 47.26	8 8 39.1	9 46.0	8.1925	8.913	2.70	3.55
3 20 48.7	339	13 42 56.82	43 9.48	8 10 36.2	11 42.3	8.1885	8.907	2.70	3.56
4 20 45.1	340	13 43 18.94	43 31.48	8 12 31.8	13 37.1	8.1843	8.902	2.71	3.57
5 20 41.5	341	13 43 40.84	43 53.26	8 14 25.8	15 30.3	8.1798	8.896	2.72	3.57
6 20 37.9	342	13 44 2.51	44 14.81	8 16 18.3	17 21.9	8.1752	8.890	2.73	3.58
7 20 34.4	343	13 44 23.95	44 36.13	8 18 9.3	19 12.0	8.1706	8.884	2.74	3.58
8 20 30.8	344	13 44 45.17	44 57.22	8 19 58.7	21 0.5	8.1660	8.877	2.74	3.59
9 20 27.2	345	13 45 6.16	45 18.08	8 21 46.5	22 47.4	8.1612	8.871	2.75	3.59
10 20 23.6	346	13 45 26.91	45 38.70	8 23 32.6	24 32.6	8.1560	8.864	2.76	3.60
11 20 20.0	347	13 45 47.41	45 59.07	8 25 17.0	26 16.2	8.1508	8.857	2.77	3.60
12 20 16.4	348	13 46 7.67	46 19.19	8 26 59.8	27 58.1	8.1456	8.850	2.78	3.61
13 20 12.8	349	13 46 27.68	46 39.06	8 28 40.9	29 38.2	8.1402	8.843	2.78	3.61
14 20 9.2	350	13 46 47.44	46 58.68	8 30 20.3	31 16.6	8.1347	8.835	2.79	3.62
15 20 5.6	351	13 47 6.95	47 18.04	8 31 58.0	32 53.3	8.1290	8.828	2.79	3.62
16 20 2.0	352	13 47 26.20	47 37.14	8 33 33.9	34 28.2	8.1230	8.820	2.80	3.63
17 19 58.4	353	13 47 45.18	47 55.97	8 35 8.1	36 1.4	8.1168	8.812	2.80	3.63
18 19 54.8	354	13 48 3.89	48 14.53	8 36 40.6	37 32.9	8.1106	8.804	2.81	3.64
19 19 51.1	355	13 48 22.33	48 32.81	8 38 11.3	39 2.6	8.1041	8.795	2.82	3.64
20 19 47.5	356	13 48 40.49	48 50.81	8 39 40.1	40 30.4	8.0973	8.786	2.82	3.65
21 19 43.9	357	13 48 58.36	49 8.52	8 41 7.1	41 56.4	8.0902	8.777	2.83	3.65
22 19 40.2	358	13 49 15.94	49 25.94	8 42 32.3	43 20.5	8.0831	8.767	2.83	3.65
23 19 36.6	359	13 49 33.23	49 43.06	8 43 55.6	44 42.7	8.0758	8.758	2.84	3.66
24 19 32.9	360	13 49 50.23	49 59.89	8 45 17.1	46 3.1	8.0682	8.748	2.85	3.66
25 19 29.3	361	13 50 6.93	50 16.42	8 46 36.7	47 21.6	8.0603	8.737	2.85	3.67
26 19 25.6	362	13 50 23.32	50 32.64	8 47 54.3	48 38.1	8.0521	8.726	2.86	3.67
27 19 21.9	363	13 50 39.40	50 48.54	8 49 9.9	49 52.6	8.0436	8.715	2.86	3.67
28 19 18.3	364	13 50 55.16	51 4.12	8 50 23.6	51 5.2	8.0349	8.703	2.87	3.68
29 19 14.6	365	13 51 10.61	51 19.38	8 51 35.3	52 15.8	8.0260	8.691	2.88	3.68
30 19 10.9	366	13 51 25.74	51 34.32	8 52 45.0	53 24.4	8.0169	8.679	2.88	3.69
31 19 7.2	367	13 51 40.55	51 48.94	8 53 52.8	54 31.0	8.0072	8.666	2.89	3.69
32 19 3.5	368	13 51 55.02	52 3.23	− 8 54 58.6	55 35.6	+7.9971	−8.653	−2.90	+3.70

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.									
Mean Solar Time of Meridian Transit.	Side-real Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Jan. 0 10 46.3	0	5 26 35.94	26 33.56	+23 22 31.8	22 30.0	−7.8618	−7.750	+2.27	
1 10 42.2	1	5 26 25.56	26 23.21	23 22 23.6	22 21.8	7.8580	7.748	2.29	
2 10 38.1	2	5 26 15.27	26 12.95	23 22 15.5	22 13.7	7.8540	7.746	2.31	
3 10 34.0	3	5 26 5.06	26 2.77	23 22 7.4	22 5.7	7.8501	7.743	2.33	
4 10 29.9	4	5 25 54.94	25 52.68	23 21 59.4	21 57.6	7.8460	7.740	2.35	
5 10 25.8	5	5 25 44.92	25 42.69	23 21 51.6	21 49.8	7.8417	7.737	2.37	
6 10 21.7	6	5 25 35.00	25 32.80	23 21 43.8	21 42.0	7.8372	7.734	2.39	
7 10 17.6	7	5 25 25.18	25 23.01	23 21 36.0	21 34.3	7.8325	7.731	2.41	
8 10 13.5	8	5 25 15.46	25 13.32	23 21 28.4	21 26.7	7.8276	7.728	2.43	
9 10 9.4	9	5 25 5.83	25 3.72	23 21 20.7	21 19.0	7.8225	7.725	2.45	+2.22
10 10 5.3	10	5 24 56.31	24 54.23	23 21 13.0	21 11.3	7.8170	7.721	2.46	2.25
11 10 1.2	11	5 24 46.91	24 44.86	23 21 5.5	21 3.8	7.8112	7.717	2.48	2.28
12 9 57.2	12	5 24 37.65	24 35.63	23 20 58.0	20 56.4	7.8051	7.712	2.49	2.30
13 9 53.1	13	5 24 28.52	24 26.53	23 20 50.6	20 48.9	7.7987	7.707	2.50	2.32
14 9 49.0	14	5 24 19.53	24 17.57	23 20 43.3	20 41.6	7.7922	7.702	2.52	2.34
15 9 44.9	15	5 24 10.69	24 8.76	23 20 36.2	20 34.5	7.7854	7.697	2.53	2.36
16 9 40.8	16	5 24 1.99	24 0.09	23 20 29.1	20 27.5	7.7782	7.692	2.55	2.38
17 9 36.7	17	5 23 53.43	23 51.56	23 20 22.1	20 20.5	7.7706	7.686	2.56	2.40
18 9 32.6	18	5 23 45.03	23 43.19	23 20 15.2	20 13.7	7.7626	7.680	2.57	2.42
19 9 28.6	19	5 23 36.78	23 34.97	23 20 8.4	20 6.9	7.7544	7.674	2.58	2.44
20 9 24.5	20	5 23 28.68	23 26.91	23 20 1.6	20 0.0	7.7459	7.667	2.59	2.46
21 9 20.5	21	5 23 20.75	23 19.02	23 19 54.9	19 53.4	7.7369	7.660	2.60	2.48
22 9 16.4	22	5 23 12.99	23 11.30	23 19 48.4	19 46.9	7.7274	7.652	2.61	2.50
23 9 12.4	23	5 23 5.41	23 3.76	23 19 42.1	19 40.6	7.7174	7.643	2.62	2.52
24 9 8.3	24	5 22 58.01	22 56.40	23 19 35.8	19 34.4	7.7070	7.634	2.63	2.53
25 9 4.3	25	5 22 50.79	22 49.22	23 19 29.7	19 28.2	7.6962	7.625	2.64	2.55
26 9 0.2	26	5 22 43.75	22 42.22	23 19 23.7	19 22.3	7.6849	7.616	2.65	2.56
27 8 56.2	27	5 22 36.89	22 35.40	23 19 18.0	19 16.6	7.6731	7.606	2.66	2.57
28 8 52.1	28	5 22 30.22	22 28.77	23 19 12.3	19 11.0	7.6603	7.596	2.67	2.58
29 8 48.1	29	5 22 23.73	22 22.32	23 19 6.7	19 5.5	7.6473	7.586	2.67	2.59
30 8 44.0	30	5 22 17.42	22 16.05	23 19 1.2	19 0.1	7.6340	7.575	2.68	2.60
31 8 40.0	31	5 22 11.30	22 9.98	23 18 55.8	18 54.8	7.6200	7.562	2.68	2.61
Feb. 1 8 36.0	32	5 22 5.39	22 4.11	23 18 50.6	18 49.6	7.6052	7.547	2.69	2.62
2 8 32.0	33	5 21 59.68	21 58.45	23 18 45.7	18 44.7	7.5898	7.531	2.69	2.63
3 8 27.9	34	5 21 54.18	21 52.99	23 18 40.9	18 40.0	7.5740	7.514	2.70	2.64
4 8 23.9	35	5 21 48.87	21 47.73	23 18 36.3	18 35.4	7.5574	7.497	2.70	2.64
5 8 19.9	36	5 21 43.78	21 42.68	23 18 31.8	18 31.0	7.5398	7.479	2.71	2.65
6 8 15.9	37	5 21 38.90	21 38.85	23 18 27.6	18 26.7	7.5212	7.461	2.71	2.66
7 8 11.9	38	5 21 34.24	21 33.23	23 18 23.5	18 22.7	7.5016	7.442	2.72	2.66
8 8 7.9	39	5 21 29.78	21 27.82	23 18 19.6	18 18.8	7.4815	7.422	2.72	2.67
9 8 3.9	40	5 21 25.51	21 24.60	23 18 15.9	18 15.2	7.4605	7.401	2.72	2.67
10 7 59.9	41	5 21 21.46	21 20.60	23 18 12.4	18 11.6	7.4371	7.379	2.72	2.68
11 7 55.9	42	5 21 17.64	21 16.83	23 18 9.0	18 8.3	7.4110	7.355	2.73	2.69
12 7 51.9	43	5 21 14.04	21 13.28	23 18 5.9	18 5.3	7.3844	7.329	2.73	2.69
13 7 47.9	44	5 21 10.67	21 9.96	23 18 3.0	18 2.4	7.3548	7.297	2.73	2.70
14 7 43.9	45	5 21 7.53	21 6.87	23 18 0.2	17 59.6	7.3230	7.265	2.73	2.70
15 7 39.9	46	5 21 4.61	21 4.00	23 17 57.7	17 57.2	7.2893	7.231	2.73	2.70
16 7 35.9	47	5 21 1.92	21 1.36	23 17 55.4	17 54.9	7.2532	7.193	2.73	2.71
17 7 31.9	48	5 20 59.45	20 58.94	23 17 53.3	17 52.9	7.2145	7.152	2.73	2.71
18 7 28.0	49	5 20 57.20	20 56.74	23 17 51.3	17 51.0	7.1720	7.108	2.74	2.71
19 7 24.0	50	5 20 55.16	20 54.75	23 17 49.6	17 49.3	7.1249	7.050	2.74	2.72
20 7 20.1	51	5 20 53.34	20 52.98	23 17 48.1	17 47.8	7.0695	6.988	2.74	2.72
21 7 16.1	52	5 20 51.76	20 51.45	23 17 46.8	17 46.6	7.0060	6.903	2.74	2.72
22 7 12.2	53	5 20 50.42	20 50.16	23 17 45.8	17 45.6	6.9315	6.719	2.74	2.73
23 7 8.2	54	5 20 49.31	20 49.10	23 17 44.9	17 44.7	6.8416	6.645	2.74	2.73
24 7 4.3	55	5 20 48.42	20 48.27	23 17 44.2	17 44.0	6.7281	6.582	2.74	2.73
25 7 0.4	56	5 20 47.77	20 47.67	23 17 43.8	17 43.6	6.5740	6.386	2.74	2.73
26 6 56.4	57	5 20 47.35	20 47.30	23 17 43.5	17 43.4	−6.3330	−6.018	2.74	2.73
27 6 52.5	58	5 20 47.17	20 47.17	23 17 43.5	17 43.5	+5.6367	+5.842	2.74	2.73
28 6 48.6	59	5 20 47.21	20 47.27	23 17 43.7	17 43.8	6.0457	6.319	2.74	2.73
29 6 44.7	60	5 20 47.48	20 47.59	23 17 44.1	17 44.2	6.4214	6.541	2.74	2.73
30 6 40.8	61	5 20 47.97	20 48.14	+23 17 44.7	17 44.8	+6.6269	+6.687	+2.74	+2.73

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Mar. 1 6 40.8	61	5 20 47.97	20 48.14	+23 17 44.7	17 44.8	+6.6269	+6.687	+2.74	+2.73
2 6 36.9	62	5 20 48.70	20 48.92	23 17 45.4	17 45.6	6.7639	6.799	2.74	2.73
3 6 33.0	63	5 20 49.66	20 49.93	23 17 46.5	17 46.7	6.8710	6.903	2.74	2.73
4 6 29.1	64	5 20 50.85	20 51.18	23 17 47.7	17 48.0	6.9589	6.972	2.74	2.72
5 6 25.2	65	5 20 52.28	20 52.66	23 17 49.1	17 49.4	7.0311	7.032	2.74	2.72
6 6 21.3	66	5 20 53.94	20 54.37	23 17 50.8	17 51.1	7.0920	7.097	2.74	2.72
7 6 17.4	67	5 20 55.84	20 56.32	23 17 52.6	17 53.0	7.1448	7.132	2.74	2.72
8 6 13.5	68	5 20 57.97	20 58.50	23 17 54.6	17 55.1	7.1918	7.174	2.74	2.71
9 6 9.6	69	5 21 0.34	21 0.92	23 17 56.9	17 57.4	7.2343	7.231	2.74	2.71
10 6 5.7	70	5 21 2.94	21 3.57	23 17 59.5	18 0.1	7.2730	7.273	2.73	2.71
11 6 1.8	71	5 21 5.75	21 6.43	23 18 2.2	18 2.9	7.3070	7.304	2.73	2.71
12 5 57.9	72	5 21 8.79	21 9.52	23 18 5.2	18 5.9	7.3399	7.333	2.73	2.70
13 5 54.0	73	5 21 12.06	21 12.84	23 18 8.4	18 9.0	7.3705	7.354	2.73	2.70
14 5 50.1	74	5 21 15.56	21 16.39	23 18 11.6	18 12.4	7.3991	7.380	2.73	2.70
15 5 46.2	75	5 21 19.29	21 20.17	23 18 15.2	18 16.1	7.4259	7.410	2.73	2.69
16 5 42.3	76	5 21 23.24	21 24.17	23 18 19.0	18 20.0	7.4512	7.433	2.73	2.69
17 5 38.4	77	5 21 27.42	21 28.40	23 18 23.0	18 24.1	7.4748	7.455	2.72	2.68
18 5 34.5	78	5 21 31.83	21 32.86	23 18 27.1	18 28.2	7.4967	7.475	2.72	2.68
19 5 30.7	79	5 21 36.46	21 37.54	23 18 31.4	18 32.6	7.5174	7.495	2.72	2.67
20 5 26.8	80	5 21 41.30	21 42.42	23 18 36.1	18 37.2	7.5371	7.515	2.72	2.67
21 5 23.0	81	5 21 46.35	21 47.52	23 18 40.8	18 42.0	7.5559	7.532	2.71	2.66
22 5 19.2	82	5 21 51.62	21 52.84	23 18 45.8	18 47.0	7.5740	7.549	2.71	2.66
23 5 15.4	83	5 21 57.12	21 58.39	23 18 51.0	18 52.2	7.5906	7.562	2.71	2.65
24 5 11.5	84	5 22 2.83	22 4.15	23 18 56.2	18 57.5	7.6065	7.574	2.71	2.64
25 5 7.7	85	5 22 8.75	22 10.11	23 19 1.7	19 3.0	7.6219	7.586	2.70	2.63
26 5 3.9	86	5 22 14.89	22 16.30	23 19 7.3	19 8.7	7.6368	7.598	2.70	2.62
27 5 0.1	87	5 22 21.24	22 22.70	23 19 13.0	19 14.4	7.6512	7.613	2.70	2.61
28 4 56.2	88	5 22 27.79	22 29.30	23 19 19.0	19 20.4	7.6644	7.627	2.69	2.60
29 4 52.4	89	5 22 34.53	22 36.09	23 19 25.2	19 26.6	7.6767	7.641	2.69	2.59
30 4 48.6	90	5 22 41.48	22 43.08	23 19 31.5	19 33.0	7.6895	7.651	2.69	2.58
31 4 44.8	91	5 22 48.64	22 50.28	23 19 38.1	19 39.6	7.7019	7.660	2.69	2.57
Apr. 1 4 41.0	92	5 22 56.00	22 56.79	23 19 44.7	19 46.2	7.7139	7.669	2.68	2.56
2 4 37.2	93	5 23 3.57	23 5.30	23 19 51.5	19 53.1	7.7255	7.678	2.68	2.55
3 4 33.4	94	5 23 11.34	23 13.12	23 19 58.5	20 0.1	7.7366	7.687	2.68	2.54
4 4 29.6	95	5 23 19.31	23 21.13	23 20 5.5	20 7.2	7.7475	7.696	2.67	2.52
5 4 25.8	96	5 23 27.47	23 29.34	23 20 12.8	20 14.6	7.7581	7.705	2.67	2.51
6 4 22.0	97	5 23 35.83	23 37.74	23 20 20.1	20 21.9	7.7684	7.714	2.66	2.50
7 4 18.2	98	5 23 44.38	23 46.34	23 20 27.7	20 29.5	7.7784	7.723	2.66	2.48
8 4 14.4	99	5 23 53.12	23 55 13	23 20 35.3	20 37.1	7.7881	7.731	2.65	2.47
9 4 10.6	100	5 24 2.04	24 4.09	23 20 43.2	20 45.1	7.7973	7.738	2.65	2.45
10 4 6.8	101	5 24 11.14	24 13.23	23 20 51.2	20 53.1	7.8060	7.745	2.64	2.44
11 4 3.1	102	5 24 20.43	24 22.56	23 20 59.3	21 1.3	7.8143	7.752	2.64	2.42
12 3 59.3	103	5 24 29.90	24 32.07	23 21 7.5	21 9.5	7.8222	7.758	2.63	2.41
13 3 55.5	104	5 24 39.55	24 41.76	23 21 15.7	21 17.7	7.8298	7.764	2.63	2.39
14 3 51.7	105	5 24 49.37	24 51.62	23 21 24.1	21 26.2	7.8375	7.770	2.62	2.38
15 3 47.9	106	5 24 59.37	25 1.66	23 21 32.6	21 34.6	7.8450	7.776	2.62	2.37
16 3 44.1	107	5 25 9.54	25 11.87	23 21 41.3	21 43.4	7.8523	7.781	2.61	2.35
17 3 40.4	108	5 25 19.87	25 22.24	23 21 50.0	21 52.1	7.8594	7.786	2.60	2.32
18 3 36.7	109	5 25 30.38	25 32.78	23 21 58.8	22 0.9	7.8661	7.791	2.59	2.29
19 3 32.9	110	5 25 41.03	25 43.47	23 22 7.8	22 9.9	7.8727	7.796	2.59	2.26
20 3 29.2	111	5 25 51.84	25 54.31	23 22 16.8	22 19.0	7.8791	7.801	2.58	2.23
21 3 25.4	112	5 26 2.81	26 5.32	23 22 26.0	22 28.2	7.8853	7.805	2.57	+2.20
22 3 21.7	113	5 26 13.95	26 16.49	23 22 35.1	22 37.3	7.8913	7.809	2.57	
23 3 17.9	114	5 26 25.24	26 27.82	23 22 44.4	22 46.5	7.8971	7.813	2.56	
24 3 14.2	115	5 26 36.69	26 39.30	23 22 53.8	22 55.9	7.9029	7.817	2.55	
25 3 10.5	116	5 26 48.28	26 50.93	23 23 3.1	23 5.3	7.9086	7.820	2.55	
26 3 6.8	117	5 27 0.03	27 2.71	23 23 12.6	23 14.8	7.9141	7.823	2.54	
27 3 3.0	118	5 27 11.91	27 14.63	23 23 22.0	23 24.2	7.9194	7.826	2.53	
28 2 59.3	119	5 27 23.94	27 26.69	23 23 31.6	23 33.8	7.9244	7.829	2.52	
29 2 55.5	120	5 27 36.10	27 38.89	23 23 41.4	23 43.6	7.9293	7.832	2.52	
30 2 51.8	121	5 27 48.41	27 51.23	23 23 51.1	23 53.3	7.9341	7.834	2.51	
31 2 48.1	122	5 28 0.84	28 3.69	+23 24 0.9	24 3.2	+7.9387	+7.836	+2.50	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.		Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
			At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d	h m	d	h m s	m s	° ′ ″	′ ″				
May 1	2 48.1	122	5 28 0.84	28 3.69	+23 24 0.9	24 3.2	+7.9387	+7.836	+2.50	
2	2 44.4	123	5 28 13.41	28 16.29	23 24 10.7	24 13.0	7.9431	7.837	2.49	
3	2 40.7	124	5 28 26.10	28 29.01	23 24 20.5	24 22.8	7.9473	7.838	2.48	
4	2 37.0	125	5 28 38.93	28 41.87	23 24 30.4	24 32.7	7.9514	7.839	2.47	
5	2 33.3	126	5 28 51.88	28 54.85	23 24 40.2	24 42.5	7.9554	7.840	2.46	
6	2 29.6	127	5 29 4.94	29 7.94	23 24 50.1	24 52.5	7.9593	7.841	2.45	
7	2 25.9	128	5 29 18.12	29 21.16	23 25 0.0	25 02.4	7.9631	7.842	2.44	
8	2 22.2	129	5 29 31.42	29 34.48	23 25 9.9	25 12.3	7.9669	7.842	2.43	
9	2 18.4	130	5 29 44.82	29 47.91	23 25 20.0	25 22.4	7.9707	7.842	2.42	
10	2 14.7	131	5 29 58.34	30 1.45	23 25 30.1	25 32.5	7.9741	7.842	2.41	
11	2 11.0	132	5 30 11.96	30 15.10	23 25 40.1	25 42.5	7.9774	7.842	2.40	
12	2 7.3	133	5 30 25.70	30 28.86	23 25 50.0	25 52.4	7.9806	7.842	2.39	
13	2 3.6	134	5 30 39.54	30 42.73	23 26 0.0	26 2.4	7.9837	7.842	2.38	
14	1 59.9	135	5 30 53.48	30 56.69	23 26 10.0	26 12.4	7.9867	7.841	2.36	
15	1 56.2	136	5 31 7.50	31 10.74	23 26 20.0	26 22.4	7.9896	7.841	2.35	
16	1 52.5	137	5 31 21.62	31 24.88	23 26 29.9	26 32.3	7.9924	7.841	2.33	
17	1 48.8	138	5 31 35.82	31 39.11	23 26 39.9	26 42.2	7.9951	7.840	2.31	
18	1 45.1	139	5 31 50.10	31 53.41	23 26 49.8	26 52.1	7.9979	7.840	2.29	
19	1 41.4	140	5 32 4.47	32 7.80	23 26 59.8	27 2.1	8.0004	7.839	2.27	
20	1 37.7	141	5 32 18.92	32 22.27	23 27 9.8	27 12.1	8.0028	7.838	2.25	
21	1 34.0	142	5 32 33.45	32 36.82	23 27 19.6	27 21.9	8.0051	7.837	+2.22	
22	1 30.3	143	5 32 48.05	32 51.44	23 27 29.5	27 31.8	8.0073	7.835		
23	1 26.6	144	5 33 2.73	33 6.14	23 27 39.3	27 41.5	8.0095	7.833		
24	1 22.9	145	5 33 17.48	33 20.91	23 27 49.1	27 51.3	8.0115	7.832		
25	1 19.2	146	5 33 32.30	33 35.75	23 27 58.8	28 1.0	8.0134	7.830		
26	1 15.5	147	5 33 47.19	33 50.66	23 28 8.5	28 10.7	8.0152	7.828		
27	1 11.8	148	5 34 2.14	34 5.63	23 28 18.2	28 20.4	8.0170	7.826		
28	1 8.2	149	5 34 17.15	34 20.65	23 28 27.8	28 30.0	8.0187	7.824		
29	1 4.5	150	5 34 32.21	34 35.73	23 28 37.4	28 39.7	8.0204	7.822		
30	1 0.8	151	5 34 47.32	34 50.85	23 28 46.9	28 49.2	8.0220	7.820		
31	0 57.2	152	5 35 2.48	35 6.03	23 28 56.4	28 58.6	8.0234	7.818		
June 1	0 53.5	153	5 35 17.70	35 21.26	23 29 5.8	29 8.0	8.0246	7.815		
2	0 49.8	154	5 35 32.96	35 36.53	23 29 15.1	29 17.3	8.0257	7.812		
3	0 46.2	155	5 35 48.25	35 51.83	23 29 24.4	29 26.6	8.0269	7.809		
4	0 42.5	156	5 36 3.59	36 7.18	23 29 23.6	29 25.8	8.0280	7.806		
5	0 38.8	157	5 36 18.97	36 22.57	23 29 42.8	29 45.0	8.0290	7.803		
6	0 35.2	158	5 36 34.38	36 37.99	23 29 51.9	29 54.1	8.0299	7.800		
7	0 31.5	159	5 36 49.82	36 53.44	23 30 0.9	30 3.0	8.0305	7.796		−2.22
8	0 27.8	160	5 37 5.28	37 8.91	23 30 9.9	30 12.0	8.0312	7.792		2.25
9	0 24.1	161	5 37 20.76	37 24.40	23 30 18.8	30 21.0	8.0318	7.788		2.28
10	0 20.5	162	5 37 36.27	37 39.91	23 30 27.6	30 29.8	8.0323	7.784		2.31
11	0 16.8	163	5 37 51.79	37 55.44	23 30 36.3	30 38.4	8.0327	7.780		2.33
12	0 13.1	164	5 38 7.33	38 10.98	23 30 44.9	30 47.0	8.0330	7.776		2.34
13	0 9.4	165	5 38 22.87	38 26.52	23 30 53.5	30 55.7	8.0333	7.772		2.35
14	0 5.7	166	5 38 38.43	38 42.08	23 31 2.0	31 4.2	8.0335	7.768		2.36
15	0 2.1	167	5 38 53.98	38 57.63	23 31 10.4	31 12.5	8.0336	7.764		2.36
15	23 58.4	168	5 39 9.54	39 13.20	23 31 18.7	31 20.8	8.0336	7.759		2.37
16	23 54.7	169	5 39 25.10	39 28.76	23 31 26.9	31 29.0	8.0336	7.754		2.37
17	23 51.0	170	5 39 40.65	39 44.31	23 31 35.0	31 37.1	8.0335	7.749		2.37
18	23 47.4	171	5 39 56.20	39 59.86	23 31 43.1	31 45.1	8.0333	7.744		2.38
19	23 43.7	172	5 40 11.74	40 15.40	23 31 51.1	31 53.1	8.0330	7.739		2.38
20	23 40.0	173	5 40 27.27	40 30.93	23 31 58.9	32 0.9	8.0327	7.734		2.38
21	23 36.3	174	5 40 42.79	40 46.45	23 32 6.6	32 8.5	8.0323	7.728		2.38
22	23 32.7	175	5 40 58.29	41 1.94	23 32 14.3	32 16.3	8.0318	7.723		2.39
23	23 29.0	176	5 41 13.76	41 17.41	23 32 22.0	32 23.9	8.0312	7.717		2.39
24	23 25.3	177	5 41 29.21	41 32.86	23 32 29.4	32 31.3	8.0305	7.711		2.39
25	23 21.7	178	5 41 44.64	41 48.29	23 32 36.7	32 38.6	8.0298	7.705		2.39
26	23 18.0	179	5 42 0.05	42 3.70	23 32 44.0	32 45.8	8.0291	7.699		2.40
27	23 14.3	180	5 42 15.43	42 19.07	23 32 51.1	32 52.8	8.0282	7.693		2.40
28	23 10.6	181	5 42 30.78	42 34.42	23 32 58.1	32 59.8	8.0272	7.687		2.40
29	23 7.0	182	5 42 46.09	42 49.73	23 33 5.1	33 6.8	8.0261	7.681		2.40
30	23 3.3	183	5 43 1.36	43 4.99	+23 33 12.0	33 13.6	+8.0249	+7.675		−2.40

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
July 1 22 59.6	184	5 43 16.58	43 20.20	+23 33 18.7	33 20.3	+8.0235	+7.668		−2.40
2 22 56.0	185	5 43 31.76	43 35.37	23 33 25.4	33 27.0	8.0221	7.662		2.41
3 22 52.3	186	5 43 46.89	43 50.49	23 33 31.9	33 33.5	8.0206	7.655		2.41
4 22 48.6	187	5 44 1.96	44 5.55	23 33 38.5	33 40.0	8.0190	7.648		2.41
5 22 45.0	188	5 44 16.98	44 20.56	23 33 44.8	33 46.4	8.0173	7.641		2.41
6 22 41.3	189	5 44 31.94	44 35.51	23 33 51.1	33 52.6	8.0157	7.634	−2.19	2.41
7 22 37.6	190	5 44 46.84	44 50.40	23 33 57.2	33 58.7	8.0139	7.627	2.21	2.41
8 22 33.9	191	5 45 1.67	45 5.22	23 34 3.3	34 4.7	8.0120	7.620	2.23	2.41
9 22 30.2	192	5 45 16.44	45 19.97	23 34 9.2	34 10.6	8.0100	7.612	2.25	2.40
10 22 26.5	193	5 45 31.14	45 34.66	23 34 15.0	34 16.4	8.0079	7.604	2.27	2.40
11 22 22.8	194	5 45 45.77	45 49.27	23 34 20.9	34 22.2	8.0059	7.597	2.28	2.40
12 22 19.1	195	5 46 0.31	46 3.80	23 34 26.5	34 27.8	8.0037	7.589	2.30	2.39
13 22 15.4	196	5 46 14.78	46 18.25	23 34 32.0	34 33.3	8.0013	7.581	2.31	2.39
14 22 11.7	197	5 46 29.17	46 32.62	23 34 37.5	34 38.8	7.9988	7.572	2.32	2.39
15 22 8.0	198	5 46 43.48	46 46.91	23 34 42.8	34 44.1	7.9962	7.563	2.33	2.38
16 22 4.4	199	5 46 57.71	47 1.12	23 34 48.1	34 49.3	7.9935	7.554	2.34	2.38
17 22 0.7	200	5 47 11.86	47 15.25	23 34 53.1	34 54.3	7.9908	7.546	2.36	2.37
18 21 57.0	201	5 47 25.92	47 29.29	23 34 58.1	34 59.2	7.9880	7.537	2.37	2.37
19 21 53.3	202	5 47 39.87	47 43.22	23 35 3.0	35 4.1	7.9851	7.528	2.38	2.36
20 21 49.6	203	5 47 53.72	47 57.05	23 35 7.8	35 9.0	7.9821	7.519	2.39	2.36
21 21 45.9	204	5 48 7.47	48 10.77	23 35 12.6	35 13.7	7.9790	7.510	2.40	2.35
22 21 42.2	205	5 48 21.11	48 24.39	23 35 17.2	35 18.3	7.9757	7.501	2.41	2.35
23 21 38.5	206	5 48 34.65	48 37.90	23 35 21.7	35 22.8	7.9723	7.492	2.42	2.34
24 21 34.8	207	5 48 48.08	48 51.32	23 35 26.3	35 27.3	7.9687	7.483	2.43	2.34
25 21 31.1	208	5 49 1.42	49 4.63	23 35 30.6	35 31.6	7.9650	7.474	2.44	2.33
26 21 27.3	209	5 49 14.65	49 17.83	23 35 34.9	35 35.9	7.9612	7.465	2.45	2.33
27 21 23.6	210	5 49 27.75	49 30.90	23 35 39.0	35 40.0	7.9573	7.456	2.46	2.32
28 21 19.9	211	5 49 40.74	49 43.86	23 35 43.1	35 44.0	7.9533	7.447	2.47	2.32
29 21 16.1	212	5 49 53.60	49 56.69	23 35 47.0	35 47.9	7.9491	7.438	2.48	2.31
30 21 12.4	213	5 50 6.35	50 9.41	23 35 50.9	35 51.8	7.9448	7.429	2.49	2.30
31 21 8.7	214	5 50 18.97	50 22.00	23 35 54.7	35 55.7	7.9404	7.420	2.50	2.29
Aug. 1 21 5.0	215	5 50 31.45	50 34.45	23 35 58.5	35 59.4	7.9358	7.411	2.51	2.28
2 21 1.2	216	5 50 43.80	50 46.77	23 36 2.1	36 3.0	7.9311	7.402	2.52	2.27
3 20 57.5	217	5 50 56.01	50 58.95	23 36 5.6	36 6.5	7.9262	7.393	2.53	2.26
4 20 53.8	218	5 51 8.09	51 11.00	23 36 9.2	36 10.0	7.9212	7.383	2.54	2.25
5 20 50.0	219	5 51 20.03	51 22.91	23 36 12.7	36 13.5	7.9161	7.373	2.54	2.24
6 20 46.3	220	5 51 31.84	51 34.69	23 36 16.0	36 16.8	7.9108	7.364	2.55	2.23
7 20 42.5	221	5 51 43.50	51 46.32	23 36 19.2	36 20.0	7.9053	7.355	2.55	2.22
8 20 38.8	222	5 51 55.02	51 57.81	23 36 22.5	36 23.2	7.8997	7.346	2.56	−2.20
9 20 35.0	223	5 52 6.39	52 9.15	23 36 25.6	36 26.3	7.8939	7.336	2.56	
10 20 31.3	224	5 52 17.60	52 20.32	23 36 28.6	36 29.3	7.8880	7.326	2.57	
11 20 27.5	225	5 52 28.65	52 31.33	23 36 31.7	36 32.3	7.8819	7.316	2.57	
12 20 23.8	226	5 52 39.54	52 42.18	23 36 34.6	36 35.2	7.8756	7.305	2.58	
13 20 20.0	227	5 52 50.28	52 52.88	23 36 37.4	36 38.0	7.8691	7.294	2.58	
14 20 16.3	228	5 53 0.86	53 3.42	23 36 40.3	36 40.8	7.8624	7.283	2.59	
15 20 12.5	229	5 53 11.28	53 13.80	23 36 43.0	36 44.6	7.8556	7.273	2.60	
16 20 8.8	230	5 53 21.53	53 24.01	23 36 45.7	36 46.3	7.8485	7.262	2.61	
17 20 5.0	231	5 53 31.61	53 34.05	23 36 48.2	36 48.8	7.8412	7.251	2.62	
18 20 1.2	232	5 53 41.53	53 43.93	23 36 50.6	36 51.2	7.8337	7.240	2.62	
19 19 57.5	233	5 53 51.28	53 53.64	23 36 53.0	36 53.6	7.8260	7.229	2.63	
20 19 53.7	234	5 54 0.85	54 3.17	23 36 55.4	36 55.9	7.8180	7.217	2.63	
21 19 49.9	235	5 54 10.24	54 12.52	23 36 57.7	36 58.2	7.8098	7.206	2.64	
22 19 46.2	236	5 54 19.45	54 21.69	23 37 0.1	37 0.5	7.8014	7.196	2.64	
23 19 42.4	237	5 54 28.48	54 30.68	23 37 2.3	37 2.8	7.7928	7.186	2.65	
24 19 38.6	238	5 54 37.34	54 39.49	23 37 4.5	37 5.0	7.7840	7.176	2.65	
25 19 34.8	239	5 54 46.02	54 48.12	23 37 6.7	37 7.2	7.7751	7.166	2.66	
26 19 31.0	240	5 54 54.52	54 56.57	23 37 8.8	37 9.3	7.7658	7.157	2.66	
27 19 27.2	241	5 55 2.82	55 4.82	23 37 10.9	37 11.3	7.7562	7.148	2.67	
28 19 23.4	242	5 55 10.93	55 12.88	23 37 12.9	37 13.3	7.7463	7.139	2.67	
29 19 19.6	243	5 55 18.84	55 20.74	23 37 14.8	37 15.3	7.7361	7.130	2.68	
30 19 15.8	244	5 55 26.55	55 28.40	23 37 16.7	37 17.2	7.7255	7.121	2.68	
31 19 12.0	245	5 55 34.06	55 35.86	+23 37 18.6	37 19.0	+7.7143	+7.112	−2.69	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Sept. 1 19 8.2	246	5 55 41.36	55 43.11	+23 37 20.5	37 20.9	+7.7024	+7.104	−2.69	
2 19 4.4	247	5 55 48.47	55 50.17	23 37 22.3	37 22.7	7.6898	7.096	2.70	
3 19 0.6	248	5 55 55.37	55 57.02	23 37 24.1	37 24.5	7.6764	7.089	2.70	
4 18 56.7	249	5 56 2.07	56 3.68	23 37 25.8	37 26.2	7.6622	7.082	2.70	
5 18 52.8	250	5 56 8.57	56 10.13	23 37 27.4	37 27.8	7.6478	7.074	2.71	
6 18 49.0	251	5 56 14.87	56 16.38	23 37 29.0	37 29.4	7.6333	7.067	2.71	
7 18 45.1	252	5 56 20.96	56 22.42	23 37 30.6	37 31.0	7.6183	7.060	2.71	
8 18 41.3	253	5 56 26.84	56 28.25	23 37 32.2	37 32.6	7.6028	7.053	2.71	
9 18 37.5	254	5 56 32.50	56 33.86	23 37 33.9	37 34.2	7.5860	7.046	2.72	
10 18 33.6	255	5 56 37.94	56 39.25	23 37 35.4	37 35.7	7.5683	7.038	2.72	
11 18 29.8	256	5 56 43.17	56 44.43	23 37 36.9	37 37.2	7.5509	7.029	2.72	
12 18 26.0	257	5 56 48.18	56 49.39	23 37 38.4	37 38.7	7.5318	7.020	2.72	
13 18 22.2	258	5 56 52.98	56 54.13	23 37 39.9	37 40.2	7.5118	7.012	2.72	
14 18 18.3	259	5 56 57.57	56 58.66	23 37 41.4	37 41.7	7.4919	7.003	2.73	
15 18 14.5	260	5 57 1.95	57 2.99	23 37 42.8	37 43.1	7.4700	6.996	2.73	
16 18 10.6	261	5 57 6.12	57 7.10	23 37 44.2	37 44.5	7.4469	6.989	2.73	
17 18 6.7	262	5 57 10.05	57 10.97	23 37 45.6	37 45.9	7.4225	6.983	2.73	
18 18 2.8	263	5 57 13.75	57 14.62	23 37 47.0	37 47.3	7.3967	6.967	2.73	
19 17 58.9	264	5 57 17.24	57 18.05	23 37 48.3	37 48.6	7.3692	6.971	2.73	
20 17 55.0	265	5 57 20.50	57 21.26	23 37 49.6	37 49.9	7.3399	6.965	2.74	
21 17 51.1	266	5 57 23.53	57 24.24	23 37 50.9	37 51.2	7.3070	6.959	2.74	
22 17 47.2	267	5 57 26.33	57 26.98	23 37 52.2	37 52.5	7.2714	6.954	2.74	
23 17 43.4	268	5 57 28.91	57 29.50	23 37 53.5	37 53.8	7.2343	6.949	2.74	
24 17 39.5	269	5 57 31.26	57 31.79	23 37 54.7	37 55.0	7.1928	6.944	2.74	
25 17 35.6	270	5 57 33.40	57 33.87	23 37 56.0	37 56.3	7.1470	6.939	2.74	
26 17 31.7	271	5 57 35.30	57 35.72	23 37 57.3	37 47.6	7.0945	6.934	2.74	
27 17 27.7	272	5 57 36.97	57 37.34	23 37 58.6	37 58.8	7.0347	6.929	2.74	
28 17 23.8	273	5 57 38.41	57 38.72	23 37 59.8	38 0.0	6.9622	6.925	2.74	
29 17 19.9	274	5 57 39.61	57 39.87	23 38 1.0	38 1.3	6.8790	6.921	2.74	
30 17 16.0	275	5 57 40.58	57 40.78	23 38 2.2	38 2.5	6.7710	6.916	2.74	
Oct. 1 17 12.0	276	5 57 41.32	57 41.46	23 38 3.4	38 3.7	6.6340	6.912	2.74	
2 17 8.1	277	5 57 41.84	57 41.92	23 38 4.6	38 4.9	6.4437	6.907	2.74	
3 17 4.2	278	5 57 42.13	57 42.15	23 38 5.8	38 6.1	+6.0720	6.903	2.73	
4 17 0.2	279	5 57 42.20	57 42.16	23 38 6.9	38 7.3	−5.5406	6.898	2.73	
5 16 56.3	280	5 57 42.04	57 41.94	23 38 8.1	38 8.4	6.2888	6.892	2.73	
6 16 52.4	281	5 57 41.64	57 41.49	23 38 9.2	38 9.5	6.5492	6.885	2.73	
7 16 48.4	282	5 57 41.02	57 40.81	23 38 10.3	38 10.6	6.7108	6.878	2.73	
8 16 44.5	283	5 57 40.16	57 39.90	23 38 11.4	38 11.7	6.8284	6.871	2.73	
9 16 40.5	284	5 57 39.08	57 38 76	23 38 12.5	38 12.8	6.9208	6.863	2.73	
10 16 36.6	285	5 57 37.76	57 37.39	23 38 13.6	38 13.9	6.9969	6.855	2.73	
11 16 32.6	286	5 57 36.21	57 35.78	23 38 14.6	38 14.9	7.0617	6.847	2.72	
12 16 28.7	287	5 57 34.43	57 33.94	23 38 15.6	38 15.9	7.1181	6.838	2.72	
13 16 24.8	288	5 57 32.43	57 31.89	23 38 16.6	38 16.9	7.1659	6.829	2.72	
14 16 20.8	289	5 57 30.22	57 29.62	23 38 17.6	38 17.9	7.2090	6.820	2.72	
15 16 16.9	290	5 57 27.79	57 27.14	23 38 18.5	38 18.7	7.2464	6.811	2.72	
16 16 12.9	291	5 57 25.15	57 24.44	23 38 19.4	38 19.6	7.2825	6.801	2.72	
17 16 8.9	292	5 57 22.27	57 21.51	23 38 20.3	38 20.5	7.3173	6.791	2.72	
18 16 4.9	293	5 57 19.16	57 18.33	23 38 21.2	38 21.4	7.3501	6.781	2.71	
19 16 0.9	294	5 57 15.78	57 14.93	23 38 22.1	38 22.3	7.3807	6.771	2.71	
20 15 56.9	295	5 57 12.22	57 11.30	23 38 22.9	38 23.1	7.4086	6.761	2.71	
21 15 52.9	296	5 57 8.44	57 7.46	23 38 23.8	38 24.0	7.4327	6.750	2.71	
22 15 48.9	297	5 57 4.44	57 3.41	23 38 24.6	38 24.8	7.4554	6.739	2.71	
23 15 44.9	298	5 57 0.24	56 59.15	23 38 25.4	38 25.6	7.4771	6.728	2.70	
24 15 40.9	299	5 56 55.82	56 54.67	23 38 26.2	38 26.4	7.4977	6.715	2.70	
25 15 36.8	300	5 56 51.21	56 50.01	23 38 26.9	38 27.1	7.5177	6.699	2.70	
26 15 32.8	301	5 56 46.39	56 45.14	23 38 27.6	38 27.8	7.5367	6.681	2.69	
27 15 28.8	302	5 56 41.35	56 40.05	23 38 28.3	38 28.5	7.5547	6.662	2.69	
28 15 24.7	303	5 56 36.10	56 34.75	23 38 29.0	38 29.2	7.5717	6.642	2.68	
29 15 20.7	304	5 56 30.63	56 29.23	23 38 29.6	38 29.8	7.5876	6.620	2.68	
30 15 16.7	305	5 56 24.97	56 23.52	23 38 30.1	38 30.3	7.6028	6.595	2.67	
31 15 12.7	306	5 56 19.11	56 17.61	23 38 30.6	38 30.8	7.6173	6.566	2.67	
32 15 8.6	307	5 56 13.05	56 11.50	+23 38 31.2	38 31.4	−7.6312	+6.533	−2.66	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Nov. 1 15 8.6	307	5 56 13.05	56 11.50	+23 38 31.2	38 31.4	−7.6312	+6.533	−2.66	
2 15 4.6	308	5 56 6.80	56 5.20	23 38 31.7	38 31.8	7.6445	6.500	2.66	
3 15 0.6	309	5 56 0.35	55 58.71	23 38 32.1	38 32.2	7.6572	6.464	2.65	
4 14 56.6	310	5 55 53.73	55 52.05	23 38 32.5	38 32.6	7.6694	6.424	2.64	
5 14 52.5	311	5 55 46.92	55 45.20	23 38 32.9	38 33.0	7.6811	6.386	2.64	
6 14 48.5	312	5 55 39.93	55 38.17	23 38 33.3	38 33.3	7.6923	6.240	2.63	
7 14 44.4	313	5 55 32.75	55 30.95	23 38 33.5	38 33.5	7.7030	6.143	2.62	
8 14 40.4	314	5 55 25.39	55 23.55	23 38 33.7	38 33.7	7.7134	6.018	2.62	
9 14 36.3	315	5 55 17.86	55 15.98	23 38 33.9	38 33.9	7.7233	+5.541	2.61	
10 14 32.3	316	5 55 10.16	55 8.24	23 38 33.9	38 33.9	7.7328	−5.541	2.60	
11 14 28.2	317	5 55 2.29	55 0.33	23 38 33.9	38 33.8	7.7419	5.842	2.60	
12 14 24.2	318	5 54 54.25	54 52.25	23 38 33.9	38 33.8	7.7506	6.018	2.59	
13 14 20.1	319	5 54 46.06	54 44.02	23 38 33.8	38 33.7	7.7591	6.143	2.58	
14 14 16.1	320	5 54 37.73	54 35.65	23 38 33.7	38 33.6	7.7672	6.240	2.57	
15 14 12.0	321	5 54 29.26	54 27.14	23 38 33.6	38 33.4	7.7750	6.329	2.56	
16 14 7.9	322	5 54 20.62	54 18.47	23 38 33.4	38 33.1	7.7825	6.406	2.55	
17 14 3.8	323	5 54 11.82	54 9.63	23 38 33.1	38 32.9	7.7897	6.475	2.54	
18 13 59.7	324	5 54 2.87	54 0.65	23 38 32.7	38 32.5	7.7967	6.541	2.53	
19 13 55.7	325	5 53 53.78	53 51.52	23 38 32.3	38 32.1	7.8033	6.582	2.51	
20 13 51.6	326	5 53 44.55	53 42.26	23 38 31.8	38 31.5	7.8096	6.620	2.50	
21 13 47.5	327	5 53 35.18	53 32.86	23 38 31.3	38 31.0	7.8156	6.670	2.48	
22 13 43.4	328	5 53 25.69	53 23.34	23 38 30.8	38 30.5	7.8213	6.617	2.47	
23 13 39.3	329	5 53 16.08	53 13.70	23 38 30.1	38 29.8	7.8270	6.761	2.45	
24 13 35.2	330	5 53 6.34	53 3.93	23 38 29.4	38 29.0	7.8324	6.796	2.43	
25 13 31.1	331	5 52 56.48	52 54.05	23 38 28.5	38 28.2	7.8375	6.830	2.41	
26 13 27.0	332	5 52 46.52	52 44.06	23 38 27.7	38 27.3	7.8423	6.863	2.39	
27 13 22.9	333	5 52 36.45	52 33.97	23 38 26.7	38 26.3	7.8468	6.883	2.37	
28 13 18.8	334	5 52 26.28	52 23.78	23 38 25.7	38 25.3	7.8510	6.907	2.35	
29 13 14.7	335	5 52 16.01	52 13.49	23 38 24.7	38 24.2	7.8550	6.932	2.33	
30 13 10.6	336	5 52 5.64	52 3.10	23 38 23.5	38 23.0	7.8588	6.956	2.31	
Dec. 1 13 6.5	337	5 51 55.19	51 52.63	23 38 22.3	38 21.8	7.8624	6.980	2.28	
2 13 2.4	338	5 51 44.66	51 42.08	23 38 21.0	38 20.5	7.8658	7.003	2.25	
3 12 58.2	339	5 51 34.04	51 31.44	23 38 19.7	38 19.1	7.8690	7.027	2.23	
4 12 54.1	340	5 51 23.36	51 20.75	23 38 18.2	38 17.6	7.8719	7.049	−2.20	
5 12 50.0	341	5 51 12.60	51 9.98	23 38 16.7	38 16.1	7.8746	7.067		
6 12 45.9	342	5 51 1.78	50 59.15	23 38 15.1	38 14.4	7.8771	7.083		
7 12 41.8	343	5 50 50.90	50 48.27	23 38 13.4	38 12.7	7.8794	7.097		
8 12 37.6	344	5 50 39.97	50 37.33	23 38 11.7	38 11.0	7.8814	7.110		
9 12 33.5	345	5 50 28.98	50 26 34	23 38 10.0	38 9.3	7.8833	7.122		
10 12 29.4	346	5 50 17.95	50 15.30	23 38 8.2	38 7.4	7.8850	7.133		
11 12 25.3	347	5 50 6.88	50 4.22	23 38 6.2	38 5.5	7.8865	7.144		
12 12 21.2	348	5 49 55.77	49 53.10	23 38 4.3	38 3.5	7.8878	7.155		
13 12 17.0	349	5 49 44.62	49 41.96	23 38 2.2	38 1.4	7.8888	7.165		
14 12 12.9	350	5 49 33.46	49 30.79	23 38 0.1	38 59.3	7.8897	7.176		
15 12 8.8	351	5 49 22.28	49 19.60	23 37 57.8	38 57.0	7.8904	7.188		
16 12 4.7	352	5 49 11.09	49 8.41	23 37 55.6	38 54.7	7.8909	7.199		
17 12 0.6	353	5 48 59.89	48 57.20	23 37 53.2	38 52.4	7.8911	7.211		
18 11 56.5	354	5 48 48.67	48 45.98	23 37 50.9	38 50.0	7.8910	7.222		
19 11 52.4	355	5 48 37.45	48 34.75	23 37 48.4	38 47.5	7.8908	7.233		
20 11 48.3	356	5 48 26.24	48 23.54	23 37 45.9	38 44.9	7.8905	7.243		
21 11 44.2	357	5 48 15.04	48 12.33	23 37 43.3	38 42.3	7.8901	7.252		
22 11 40.1	358	5 48 3.84	48 1.13	23 37 40.7	38 39.7	7.8895	7.260		
23 11 35.9	359	5 47 52.68	47 49.97	23 37 38.1	38 37.0	7.8888	7.268		
24 11 31.8	360	5 47 41.56	47 38.85	23 37 35.2	38 34.2	7.8878	7.274		
25 11 27.7	361	5 47 30.47	47 27.76	23 37 32.4	38 31.4	7.8865	7.278		
26 11 23.6	362	5 47 19.41	47 16.71	23 37 29.5	38 28.5	7.8850	7.279		
27 11 19.5	363	5 47 8.39	47 5.69	23 37 26.8	38 26.0	7.8833	7.280		
28 11 15.4	364	5 46 57.40	46 54.70	23 37 24.0	38 23.2	7.8814	7.281		
29 11 11.3	365	5 46 46.47	46 43.77	23 37 21.3	38 20.5	7.8793	7.281		
30 11 7.2	366	5 46 35.58	46 32.88	23 37 18.6	38 17.8	7.8770	7.281		
31 11 3.1	367	5 46 24.76	46 22.07	23 37 15.9	38 15.1	7.8745	7.282		
32 10 59.0	368	5 46 14.00	46 11.31	+23 37 13.4	38 12.6	−7.8718	−7.282		

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Jan. 0 5 35.4	0	0 14 46.36	14 46.38	+ 0 0 54.0	0 54.2	+7.1665	+8.051	+2.46	+3.30
1 5 31.5	1	0 14 48.52	14 48.54	0 1 10.8	1 11.0	7.1880	8.073	2.46	3.30
2 5 27.6	2	0 14 50.80	14 50.82	0 1 28.2	1 28.4	7.2108	8.093	2.46	3.30
3 5 23.7	3	0 14 53.20	14 53.22	0 1 46.4	1 46.6	7.2325	8.113	2.46	3.29
4 5 19.8	4	0 14 55.73	14 55.76	0 2 5.4	2 5.6	7.2503	8.131	2.46	3.29
5 5 15.9	5	0 14 58.36	14 58.39	0 2 25.3	2 25.5	7.2711	8.149	2.46	3.29
6 5 12.0	6	0 15 1.11	15 1.14	0 2 46.0	2 46.2	7.2903	8.165	2.46	3.28
7 5 8.1	7	0 15 3.98	15 4.01	0 3 7.4	3 7.6	7.3086	8.181	2.46	3.28
8 5 4.2	8	0 15 6.97	15 7.00	0 3 29.6	3 29.8	7.3260	8.196	2.46	3.27
9 5 0.4	9	0 15 10.09	15 10.12	0 3 52.6	3 52.8	7.3428	8.211	2.46	3.27
10 4 56.5	10	0 15 13.32	15 13.35	0 4 16.3	4 16.6	7.3588	8.225	2.46	3.26
11 4 52.6	11	0 15 16.67	15 16.70	0 4 40.8	4 41.1	7.3741	8.238	2.45	3.26
12 4 48.7	12	0 15 20.14	15 20.17	0 5 6.1	5 6.4	7.3888	8.251	2.45	3.25
13 4 44.9	13	0 15 23.73	15 23.77	0 5 32.1	5 32.4	7.4031	8.263	2.45	3.25
14 4 41.0	14	0 15 27.44	15 27.48	0 5 58.8	5 59.1	7.4165	8.275	2.45	3.24
15 4 37.1	15	0 15 31.26	15 31.30	0 6 26.3	6 26.6	7.4296	8.286	2.44	3.24
16 4 33.2	16	0 15 35.20	15 35.24	0 6 54.5	6 54.8	7.4424	8.297	2.44	3.23
17 4 29.4	17	0 15 39.25	15 39.29	0 7 23.3	7 23.6	7.4547	8.308	2.44	3.23
18 4 25.5	18	0 15 43.41	15 43.45	0 7 52.8	7 53.1	7.4665	8.318	2.43	3.22
19 4 21.6	19	0 15 47.69	15 47.73	0 8 23.1	8 23.4	7.4778	8.328	2.43	3.22
20 4 17.7	20	0 15 52.08	15 52.12	0 8 54.2	8 54.5	7.4888	8.337	2.42	3.21
21 4 13.9	21	0 15 56.57	15 56.62	0 9 25.9	9 26.3	7.4994	8.347	2.42	3.21
22 4 10.0	22	0 16 1.17	16 1.22	0 9 58.2	9 58.6	7.5096	8.356	2.41	3.20
23 4 6.2	23	0 16 5.88	16 5.93	0 10 31.2	10 31.6	7.5195	8.365	2.41	3.20
24 4 2.3	24	0 16 10.70	16 10.75	0 11 4.8	11 5.2	7.5292	8.373	2.40	3.19
25 3 58.5	25	0 16 15.62	16 15.67	0 11 39.1	11 39.5	7.5381	8.381	2.40	3.19
26 3 54.6	26	0 16 20.65	16 20.70	0 12 14.0	12 14.4	7.5469	8.389	2.39	3.18
27 3 50.8	27	0 16 25.78	16 25.83	0 12 49.5	12 49.9	7.5556	8.396	2.39	3.18
28 3 46.9	28	0 16 31.00	16 31.05	0 13 25.7	13 26.1	7.5639	8.404	2.38	3.17
29 3 43.1	29	0 16 36.33	16 36.38	0 14 2.5	14 2.9	7.5720	8.411	2.38	3.17
30 3 39.2	30	0 16 41.76	16 41.82	0 14 39.9	14 40.3	7.5799	8.418	2.37	3.16
31 3 35.4	31	0 16 47.28	16 47.34	0 15 17.9	15 18.3	7.5875	8.425	2 37	3.16
Feb. 1 3 31.6	32	0 16 52.89	16 52.95	0 15 56.6	15 57.0	7.5949	8.432	2.36	3.15
2 3 27.8	33	0 16 58.60	16 58.66	0 16 35.8	16 36.2	7.6019	8.438	2.36	3.15
3 3 23.9	34	0 17 4.41	17 4.47	0 17 15.6	17 16.0	7.6087	8.444	2.35	3.14
4 3 20.1	35	0 17 10.29	17 10.36	0 17 55.9	17 56.4	7.6153	8.450	2.35	3.13
5 3 16.3	36	0 17 16.29	17 16.36	0 18 36.8	18 37.3	7.6218	8.456	2.34	3.12
6 3 12.5	37	0 17 22.38	17 22.45	0 19 18.2	19 18.7	7.6282	8.462	2.34	3.11
7 3 8.6	38	0 17 28.54	17 28 61	0 20 0.1	20 0.6	7.6345	8.467	2.33	3.10
8 3 4.8	39	0 17 34.79	17 34.87	0 20 42.5	20 43.0	7.6406	8.472	2.32	3.09
9 3 1.0	40	0 17 41.11	17 41.19	0 21 25.5	21 26.0	7.6466	8.477	2.31	3.08
10 2 57.2	41	0 17 47.53	17 47.61	0 22 8.9	22 9.4	7.6520	8.482	2.30	3.07
11 2 53.3	42	0 17 54.03	17 54.11	0 22 52.8	22 53.3	7.6572	8.487	2.29	3.06
12 2 49.5	43	0 18 0.61	18 0.69	0 23 37.2	23 37.7	7.6623	8.491	2.28	3.05
13 2 45.7	44	0 18 7.27	18 7.35	0 24 22.1	24 22.6	7.6672	8.495	2.26	3.04
14 2 41.9	45	0 18 14.00	18 14.09	0 25 7.4	25 8.0	7.6720	8.500	2.25	3.03
15 2 38.0	46	0 18 20.81	18 20.90	0 25 53.1	25 53.7	7.6767	8.504	2.24	3.02
16 2 34.2	47	0 18 27.69	18 27.78	0 26 39.2	26 39.8	7.6813	8.508	2.23	3.01
17 2 30.4	48	0 18 34.63	18 34.72	0 27 25.8	27 26.4	7.6857	8.512	2.22	2.99
18 2 26.6	49	0 18 41.65	18 41.74	0 28 12.8	28 13.4	7.6899	8.516	2.21	2.98
19 2 22.7	50	0 18 48.74	18 48.83	0 29 0.2	29 0.8	7.6940	8.519	2.20	2.97
20 2 18.9	51	0 18 55.89	18 55.98	0 29 47.9	29 48.5	7.6980	8.522	2.19	2.96
21 2 15.1	52	0 19 3.10	19 3.19	0 30 36.0	30 36.6	7.7019	8.525	2.18	2.94
22 2 11.3	53	0 19 10.38	19 10.48	0 31 24.5	31 25.2	7.7056	8.528	2.17	2.93
23 2 7.5	54	0 19 17.72	19 17.82	0 32 13.3	32 14.0	7.7091	8.531	2.16	2.91
24 2 3.7	55	0 19 25.11	19 25.21	0 33 2.4	33 3.1	7.7124	8.534	2.15	2.90
25 1 59.9	56	0 19 32.57	19 32.67	0 33 51.9	33 52.6	7.7156	8.537	2.13	2.89
26 1 56.1	57	0 19 40.08	19 40.18	0 34 41.7	34 42.4	7.7187	8.540	2 12	2.88
27 1 52.3	58	0 19 47.65	19 47.75	0 35 31.8	35 32.5	7.7218	8.543	2.11	2.86
28 1 48.5	59	0 19 55.27	19 55.37	0 36 22.2	36 22.9	7.7248	8.545	2.10	2.84
29 1 44.7	60	0 20 2.93	20 3.04	0 37 12.9	37 13.6	7.7278	8.547	2.08	2.82
30 1 40.9	61	0 20 10.65	20 10.76	+ 0 38 3.8	38 4.5	+7.7304	+8.550	+2.06	+2.80

NEPTUNE, 1864.

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Mar. 1 1 40.9	61	0 20 10.65	20 10.76	+ 0 38 3.8	38 4.5	+7.7304	+8.550	+2.06	+2.80
2 1 37.1	62	0 20 18.42	20 18.53	0 38 55.0	38 55.8	7.7329	8.552	2.04	2.78
3 1 33.3	63	0 20 26.23	20 26.34	0 39 46.4	39 47.2	7.7353	8.554	2.02	2.76
4 1 29.5	64	0 20 34.08	20 34.19	0 40 38.1	40 38.9	7.7377	8.556	2.00	2.72
5 1 25.7	65	0 20 41.97	20 42.08	0 41 30.0	41 30.8	7.7399	8.558	1.98	+2.67
6 1 21.9	66	0 20 49.91	20 50.02	0 42 22.1	42 22.9	7.7421	8.560	1.96	
7 1 18.1	67	0 20 57.88	20 57.99	0 43 14.4	43 15.2	7.7442	8.561	1.94	
8 1 14.3	68	0 21 5.89	21 6.00	0 44 6.8	44 7.6	7.7462	8.562	1.91	
9 1 10.5	69	0 21 13.93	21 14.04	0 44 59.4	45 0.2	7.7480	8.563	1.89	
10 1 6.7	70	0 21 22.01	21 22.13	0 45 52.2	45 53.0	7.7496	8.564	1.86	
11 1 2.9	71	0 21 30.11	21 30.23	0 46 45.1	46 45.9	7.7512	8.565	1.83	
12 0 59.1	72	0 21 38.25	21 38.37	0 47 38.1	47 38.9	7.7527	8.566	1.80	
13 0 55.3	73	0 21 46.41	21 46.53	0 48 31.2	48 32.0	7.7540	8.567	+1.75	
14 0 51.5	74	0 21 54.60	21 54.72	0 49 24.4	49 25.2	7.7553	8.568		
15 0 47.7	75	0 22 2.80	22 2.92	0 50 17.7	50 18.5	7.7565	8.569		
16 0 43.9	76	0 22 11.03	22 11.15	0 51 11.2	51 12.0	7.7575	8.569		
17 0 40.1	77	0 22 19.28	22 19.40	0 52 4.7	52 5.5	7.7584	8.570		
18 0 36.3	78	0 22 27.55	22 27.67	0 52 58.2	52 59.0	7.7593	8.570		
19 0 32.5	79	0 22 35.83	22 35.95	0 53 51.8	53 52.6	7.7601	8.571		
20 0 28.7	80	0 22 44.11	22 44.23	0 54 45.4	54 46.2	7.7607	8.571		
21 0 25.0	81	0 22 52.41	22 52.53	0 55 39.0	55 39.9	7.7611	8.571		
22 0 21.2	82	0 23 0.72	23 0.84	0 56 32.7	56 33.6	7.7615	8.571		
23 0 17.4	83	0 23 9.04	23 9.16	0 57 26.4	57 27.3	7.7619	8.571		
24 0 13.6	84	0 23 17.36	23 17.48	0 58 20.0	58 20.9	7.7622	8.571		
25 0 9.8	85	0 23 25.69	23 25.82	0 59 13.5	59 14.4	7.7624	8.571		
26 0 6.0	86	0 23 34.02	23 34.15	1 0 7.1	0 8.0	7.7625	8.570		
27 0 2.2	87	0 23 42.36	23 42.49	1 1 0.6	1 1.5	7.7626	8.570		
27 23 58.4	88	0 23 50.69	23 50.82	1 1 54.0	1 54.9	7.7625	8.569		
28 23 54.6	89	0 23 59.03	23 59.16	1 2 47.4	2 48.3	7.7624	8.569		
29 23 50.8	90	0 24 7.36	24 7.49	1 3 40.7	3 41.6	7.7621	8.568		
30 23 47.0	91	0 24 15.68	24 15.81	1 4 33.9	4 34.8	7.7616	8.567		
31 23 43.2	92	0 24 23.99	24 24.12	1 5 27.0	5 27.9	7.7611	8.566		
Apr. 1 23 39.4	93	0 24 32.30	24 32.43	1 6 20.0	6 20.9	7.7604	8.565		
2 23 35.6	94	0 24 40.59	24 40.72	1 7 12.9	7 13.8	7.7597	8.564		
3 23 31.8	95	0 24 48.87	24 49.00	1 8 5.6	8 6.5	7.7590	8.563		
4 23 28.0	96	0 24 57.13	24 57.26	1 8 58.1	8 59.0	7.7582	8.562		
5 23 24.2	97	0 25 5.37	25 5.50	1 9 50.5	9 51.4	7.7572	8.560		
6 23 20.4	98	0 25 13.59	25 13.72	1 10 42.7	10 43.6	7.7561	8.559		
7 23 16.6	99	0 25 21.79	25 21.92	1 11 34.7	11 35.6	7.7549	8.557		
8 23 12.8	100	0 25 29.97	25 30.10	1 12 26.5	12 27.4	7.7537	8.555	−1.75	−2.68
9 23 9.0	101	0 25 38.13	25 38.26	1 13 18.1	13 19.0	7.7524	8.553	1.80	2.73
10 23 5.2	102	0 25 46.26	25 46.39	1 14 9.4	14 10.3	7.7509	8.551	1.83	2.76
11 23 1.4	103	0 25 54.36	25 54.49	1 15 0.5	15 1.4	7.7493	8.549	1.86	2.78
12 22 57.6	104	0 26 2.43	26 2.56	1 15 51.4	15 52.3	7.7477	8.547	1.89	2.80
13 22 53.8	105	0 26 10.47	26 10.60	1 16 42.1	16 43.0	7.7459	8.545	1.91	2.82
14 22 50.1	106	0 26 18.47	26 18.60	1 17 32.5	17 33.4	7.7440	8.543	1.93	2.84
15 22 46.3	107	0 26 26.44	26 26.57	1 18 22.6	18 23.5	7.7420	8.541	1.95	2.86
16 22 42.5	108	0 26 34.37	26 34.50	1 19 12.4	19 13.3	7.7399	8.538	1.97	2.88
17 22 38.7	109	0 26 42.27	26 42.41	1 20 1.8	20 2.7	7.7377	8.535	1.99	2.89
18 22 34.9	110	0 26 50.12	26 50.26	1 20 51.0	20 51.9	7.7355	8.532	2.01	2.91
19 22 31.1	111	0 26 57.93	26 58.07	1 21 39.8	21 40.7	7.7332	8.529	2.03	2.92
20 22 27.3	112	0 27 5.69	27 5.83	1 22 28.3	22 29.2	7.7308	8.526	2.05	2.93
21 22 23.5	113	0 27 13.42	27 13.56	1 23 16.4	23 17.3	7.7282	8.522	2.06	2.94
22 22 19.7	114	0 27 21.10	27 21.24	1 24 4.2	24 5.1	7.7254	8.519	2.08	2.95
23 22 15.9	115	0 27 28.73	27 28.87	1 24 51.6	24 52.5	7.7225	8.516	2.09	2.96
24 22 12.1	116	0 27 36.30	27 36.44	1 25 38.6	25 39.5	7.7196	8.513	2.10	2.97
25 22 8.3	117	0 27 43.82	27 43.96	1 26 25.3	26 26.2	7.7165	8.509	2.11	2.98
26 22 4.5	118	0 27 51.29	27 51.43	1 27 11.6	27 12.5	7.7134	8.506	2.13	2.99
27 22 0.7	119	0 27 58.70	27 58.84	1 27 57.5	27 58.4	7.7102	8.502	2.14	3.00
28 21 56.9	120	0 28 6.06	28 6.20	1 28 43.0	28 43.9	7.7068	8.498	2.15	3.01
29 21 53.1	121	0 28 13.36	28 13.50	1 29 28.0	29 28.9	7.7033	8.494	2.16	3.02
30 21 49.2	122	0 28 20.60	28 20.74	+ 1 30 12.6	30 13.5	+7.6997	+8.490	−2.18	−3.03

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension. At Sidereal 0h.	Apparent Right Ascension. At Transit.	Apparent Declination. At Sidereal 0h.	Apparent Declination. At Transit.	Log Coefficient of t in Sidereal Minutes. In R.A.	Log Coefficient of t in Sidereal Minutes. In Dec.	Log Coefficient of t^2. In R.A.	Log Coefficient of t^2. In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
May 1 21 45.4	123	0 28 27.78	28 27.92	+ 1 30 56.8	30 57.7	+7.6960	+8.485	−2.19	−3.04
2 21 41.6	124	0 28 34.90	28 35.04	1 31 40.5	31 41.4	7.6921	8.480	2.20	3.05
3 21 37.8	125	0 28 41.95	28 42.08	1 32 23.8	32 24.7	7.6880	8.475	2.21	3.06
4 21 33.9	126	0 28 48.94	28 49.07	1 33 6.6	33 7.4	7.6838	8.470	2.22	3.07
5 21 30.1	127	0 28 55.86	28 55.99	1 33 48.9	33 49.7	7.6795	8.465	2.23	3.08
6 21 26.3	128	0 29 2.71	29 2.84	1 34 30.7	34 31.5	7.6751	8.460	2.24	3.09
7 21 22.5	129	0 29 9.48	29 9.61	1 35 12.0	35 12.8	7.6705	8.455	2.24	3.09
8 21 18.6	130	0 29 16.19	29 16.32	1 35 52.8	35 53.6	7.6657	8.450	2.25	3.10
9 21 14.8	131	0 29 22.82	29 22.95	1 36 33.1	36 33.9	7.6608	8.444	2.26	3.10
10 21 11.0	132	0 29 29.38	29 29.51	1 37 12.9	37 13.7	7.6558	8.438	2.27	3.11
11 21 7.2	133	0 29 35.86	29 35.99	1 37 52.1	37 52.9	7.6507	8.432	2.27	3.11
12 21 3.4	134	0 29 42.26	29 42.38	1 38 30.8	38 31.6	7.6455	8.426	2.28	3.12
13 20 59.6	135	0 29 48.59	29 48.71	1 39 9.0	39 9.8	7.6401	8.420	2.29	3.13
14 20 55.8	136	0 29 54.84	29 54.96	1 39 46.6	39 47.4	7.6347	8.414	2.30	3.13
15 20 52.0	137	0 30 1.01	30 1.13	1 40 23.6	40 24.4	7.6292	8.407	2.30	3.14
16 20 48.1	138	0 30 7.10	30 7.22	1 41 0.1	41 0.9	7.6234	8.400	2.31	3.14
17 20 44.3	139	0 30 13.10	30 13.22	1 41 36.0	41 36.8	7.6173	8.393	2.32	3.15
18 20 40.5	140	0 30 19.02	30 19.14	1 42 11.3	42 12.1	7.6110	8.386	2.33	3.15
19 20 36.7	141	0 30 24.85	30 24.97	1 42 45.9	42 46.7	7.6041	8.379	2.33	3.16
20 20 32.8	142	0 30 30.60	30 30.71	1 43 20.0	43 20.7	7.5973	8.371	2.34	3.16
21 20 29.0	143	0 30 36.26	30 36.37	1 43 53.5	43 54.2	7.5906	8.363	2.34	3.17
22 20 25.1	144	0 30 41.82	30 41.93	1 44 26.4	44 27.1	7.5834	8.355	2.35	3.17
23 20 21.3	145	0 30 47.28	30 47.39	1 44 58.7	44 59.4	7.5761	8.346	2.35	3.18
24 20 17.4	146	0 30 52.66	30 52.77	1 45 30.3	45 31.0	7.5688	8.338	2.36	3.18
25 20 13.6	147	0 30 57.94	30 58.05	1 46 1.3	46 2.0	7.5611	8.329	2.36	3.19
26 20 9.7	148	0 31 3.13	31 3.24	1 46 31.6	46 32.3	7.5529	8.320	2.37	3.19
27 20 5.9	149	0 31 8.22	31 8.33	1 47 1.3	47 2.0	7.5445	8.310	2.37	3.20
28 20 2.0	150	0 31 13.22	31 13.32	1 47 30.4	47 31.0	7.5362	8.300	2.38	3.20
29 19 58.2	151	0 31 18.12	31 18.22	1 47 58.8	47 59.4	7.5273	8.290	2.38	3.21
30 19 54.3	152	0 31 22.91	31 23.01	1 48 26.5	48 27.1	7.5181	8.279	2.39	3.21
31 19 50.5	153	0 31 27.60	31 27.70	1 48 53.5	48 54.1	7.5084	8.268	2.39	3.22
June 1 19 46.6	154	0 31 32.20	31 32.30	1 49 19.8	49 20.4	7.4986	8.257	2.40	3.22
2 19 42.8	155	0 31 36.69	31 36.79	1 49 45.4	49 46.0	7.4886	8.245	2.40	3.23
3 19 38.9	156	0 31 41.08	31 41.17	1 50 10.4	50 11.0	7.4784	8.233	2.41	3.23
4 19 35.1	157	0 31 45.35	31 45.44	1 50 34.7	50 35.3	7.4680	8.220	2.41	3.23
5 19 31.2	158	0 31 49.53	31 49.62	1 50 58.3	50 58.8	7.4570	8.207	2.41	3.23
6 19 27.4	159	0 31 53.60	31 53.69	1 51 21.1	51 21.6	7.4457	8.194	2.42	3.24
7 19 23.5	160	0 31 57.56	31 57.64	1 51 43.2	51 43.7	7.4341	8.180	2.42	3.24
8 19 19.6	161	0 32 1.42	32 1.50	1 52 4.7	52 5.2	7.4217	8.166	2.42	3.24
9 19 15.7	162	0 32 5.17	32 5.25	1 52 25.4	52 25.9	7.4092	8.151	2.42	3.24
10 19 11.9	163	0 32 8.81	32 8.89	1 52 45.4	52 45.8	7.3964	8.135	2.43	3.25
11 19 8.0	164	0 32 12.34	32 12.41	1 53 4.7	53 5.1	7.3831	8.118	2.43	3.25
12 19 4.1	165	0 32 15.76	32 15.83	1 53 23.2	53 23.6	7.3690	8.101	2.43	3.25
13 19 0.2	166	0 32 19.07	32 19.14	1 53 41.0	53 41.4	7.3541	8.083	2.43	3.25
14 18 56.4	167	0 32 22.27	32 22.34	1 53 58.1	53 58.5	7.3389	8.064	2.44	3.26
15 18 52.5	168	0 32 25.36	32 25.42	1 54 14.4	54 14.7	7.3227	8.044	2.44	3.26
16 18 48.6	169	0 32 28.33	32 28.39	1 54 29.9	54 30.2	7.3060	8.023	2.44	3.26
17 18 44.7	170	0 32 31.19	32 31.25	1 54 44.7	54 45.0	7.2883	8.001	2.44	3.26
18 18 40.8	171	0 32 33.94	32 34.00	1 54 58.8	54 59.1	7.2702	7.978	2.45	3.26
19 18 36.9	172	0 32 36.57	32 36.62	1 55 12.1	55 12.4	7.2511	7.954	2.45	3.26
20 18 33.0	173	0 32 39.09	32 39.14	1 55 24.6	55 24.8	7.2313	7.928	2.45	3.26
21 18 29.1	174	0 32 41.49	32 41.54	1 55 36.4	55 36.6	7.2104	7.900	2.45	3.26
22 18 25.2	175	0 32 43.78	32 43.83	1 55 47.5	55 47.7	7.1885	7.870	2.46	3.26
23 18 21.3	176	0 32 45.95	32 45.99	1 55 57.8	55 58.0	7.1654	7.838	2.46	3.27
24 18 17.4	177	0 32 48.00	32 48.04	1 56 7.3	56 7.5	7.1405	7.803	2.46	3.27
25 18 13.5	178	0 32 49.93	32 49.97	1 56 16.1	56 16.3	7.1141	7.766	2.46	3.27
26 18 9.6	179	0 32 51.75	32 51.79	1 56 24.1	56 24.3	7.0859	7.724	2.46	3.27
27 18 5.7	180	0 32 53.44	32 53.47	1 56 31.3	56 31.4	7.0558	7.677	2.46	3.27
28 18 1.8	181	0 32 55.01	32 55.04	1 56 37.8	56 37.9	7.0235	7.625	2.46	3.27
29 17 57.9	182	0 32 56.47	32 56.50	1 56 43.5	56 43.6	6.9886	7.566	2.46	3.27
30 17 54.0	183	0 32 57.81	32 57.84	1 56 48.4	56 48.5	6.9497	7.497	2.46	3.27
31 17 50.1	184	0 32 59.03	32 59.05	+ 1 56 52.5	56 52.5	+6.9071	+7.416	−2.46	−3.27

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
July 1 17 50.1	184	0 32 59.03	32 59.05	+ 1 56 52.5	56 52.5	+6.9071	+7.416	−2.46	−3.27
2 17 46.2	185	0 33 0.13	33 0.15	1 56 55.9	56 55.9	6.8597	7.315	2.46	3.27
3 17 42.2	186	0 33 1.11	33 1.13	1 56 58.5	56 58.5	6.8066	7.184	2.46	3.27
4 17 38.3	187	0 33 1.97	33 1.99	1 57 0.3	57 0.3	6.7461	6.985	2.46	3.27
5 17 34.4	188	0 33 2.71	33 2.72	1 57 1.3	57 1.3	6.6758	+6.655	2.46	3.27
6 17 30.5	189	0 33 3.33	33 3.34	1 57 1.7	57 1.7	6.5898	−5.842	2.46	3.27
7 17 26.5	190	0 33 3.83	33 3.84	1 57 1.3	57 1.3	6.4851	6.784	2.46	3.27
8 17 22.6	191	0 33 4.21	33 4.22	1 57 0.1	57 0.1	6.3468	7.059	2.46	3.27
9 17 18.7	192	0 33 4.47	33 4.47	1 56 58.1	56 58.1	6.1427	7.222	2.46	3.27
10 17 14.8	193	0 33 4.60	33 4.60	1 56 55.3	56 55.2	+5.7447	7.340	2.46	3.27
11 17 10.8	194	0 33 4.62	33 4.62	1 56 51.8	56 51.7	−5.4437	7.435	2.46	3.27
12 17 6.9	195	0 33 4.52	33 4.52	1 56 47.5	56 47.4	6.0458	7.511	2.46	3.27
13 17 3.0	196	0 33 4.30	33 4.29	1 56 42.5	56 42.4	6.2849	7.576	2.46	3.26
14 16 59.1	197	0 33 3.96	33 3.95	1 56 36.7	56 36.6	6.4383	7.632	2.46	3.26
15 16 55.1	198	0 33 3.50	33 3.49	1 56 30.2	56 30.0	6.5514	7.682	2.46	3.26
16 16 51.2	199	0 33 2.93	33 2.92	1 56 22.9	56 22.7	6.6410	7.727	2.45	3.26
17 16 47.2	200	0 33 2.24	33 2.22	1 56 14.9	56 14.7	6.7153	7.767	2.45	3.25
18 16 43.3	201	0 33 1.43	33 1.41	1 56 6.1	56 5.9	6.7787	7.804	2.45	3.25
19 16 39.3	202	0 33 0.50	33 0.48	1 55 56.5	55 56.3	6.8440	7.838	2.45	3.25
20 16 35.4	203	0 32 59.46	32 59.44	1 55 46.2	55 46.0	6.8821	7.870	2.45	3.25
21 16 31.4	204	0 32 58.30	32 58.27	1 55 35.2	55 35.0	6.9253	7.899	2.45	3.24
22 16 27.5	205	0 32 57.03	32 57.00	1 55 23.5	55 23.2	6.9647	7.925	2.44	3.24
23 16 23.5	206	0 32 55.64	32 55.61	1 55 11.1	55 10.8	7.0008	7.951	2.44	3.24
24 16 19.6	207	0 32 54.14	32 54.11	1 54 57.9	54 57.6	7.0341	7.974	2.44	3.24
25 16 15.6	208	0 32 52.52	32 52.48	1 54 44.0	54 43.7	7.0650	7.997	2.44	3.23
26 16 11.7	209	0 32 50.79	32 50.75	1 54 29.5	54 29.2	7.0933	8.018	2.44	3.23
27 16 7.7	210	0 32 48.94	32 48.90	1 54 14.2	54 13.9	7.1198	8.038	2.44	3.23
28 16 3.7	211	0 32 46.98	32 46.94	1 53 58.2	53 57.9	7.1449	8.056	2.43	3.23
29 15 59.8	212	0 32 44.91	32 44.86	1 53 41.5	53 41.2	7.1685	8.075	2.43	3.22
30 15 55.8	213	0 32 42.73	32 42.68	1 53 24.2	53 23.8	7.1909	8.091	2.43	3.22
31 15 51.8	214	0 32 40.43	32 40.38	1 53 6.1	53 5.7	7.2118	8.108	2.43	3.22
Aug. 1 15 47.8	215	0 32 38.03	32 37.98	1 52 47.3	52 46.9	7.2317	8.123	2.42	3.21
2 15 43.8	216	0 32 35.52	32 35.46	1 52 27.9	52 27.5	7.2507	8.138	2.42	3.21
3 15 39.8	217	0 32 32.90	32 32.84	1 52 7.9	52 7.5	7.2686	8.152	2.41	3.20
4 15 35.8	218	0 32 30.17	32 30.11	1 51 47.1	51 46.7	7.2857	8.166	2.41	3.20
5 15 31.8	219	0 32 27.34	32 27.28	1 51 25.7	51 25.3	7.3018	8.179	2.40	3.19
6 15 27.9	220	0 32 24.40	32 24.33	1 51 3.7	51 3.3	7.3170	8.191	2.40	3.19
7 15 23.9	221	0 32 21.36	32 21.29	1 50 41.0	50 40.5	7.3316	8.203	2.39	3.18
8 15 19.9	222	0 32 18.21	32 18.14	1 50 17.7	50 17.2	7.3455	8.214	2.39	3.18
9 15 15.9	223	0 32 14.97	32 14.90	1 49 53.8	49 53.3	7.3588	8.225	2.38	3.17
10 15 11.9	224	0 32 11.63	32 11.55	1 49 29.3	49 28.8	7.3715	8.236	2.38	3.16
11 15 7.9	225	0 32 8.20	32 8.12	1 49 4.2	49 3.7	7.3839	8.246	2.37	3.15
12 15 4.0	226	0 32 4.66	32 4.58	1 48 38.5	48 38.0	7.3955	8.256	2.36	3.15
13 15 0.0	227	0 32 1.03	32 0.95	1 48 12.2	48 11.7	7.4067	8.265	2.36	3.14
14 14 56.0	228	0 31 57.31	31 57.23	1 47 45.4	47 44.9	7.4171	8.274	2.35	3.13
15 14 52.0	229	0 31 53.50	31 53.42	1 47 18.1	47 17.5	7.4279	8.283	2.34	3.12
16 14 48.0	230	0 31 49.58	31 49.49	1 46 50.3	46 49.7	7.4379	8.291	2.33	3.12
17 14 44.0	231	0 31 45.58	31 45.49	1 46 21.9	46 21.3	7.4475	8.299	2.33	3.11
18 14 40.0	232	0 31 41.50	31 41.41	1 45 52.9	45 52.3	7.4569	8.307	2.32	3.10
19 14 36.0	233	0 31 37.34	31 37.25	1 45 23.4	45 22.8	7.4660	8.315	2.31	3.09
20 14 32.0	234	0 31 33.08	31 32.99	1 44 53.4	44 52.8	7.4747	8.322	2.30	3.09
21 14 28.0	235	0 31 28.74	31 28.65	1 44 22.9	44 22.3	7.4829	8.329	2.30	3.08
22 14 24.0	236	0 31 24.32	31 24.23	1 43 51.9	43 51.2	7.4910	8.336	2.29	3.07
23 14 20.0	237	0 31 19.82	31 19.73	1 43 20.4	43 19.7	7.4989	8.343	2.28	3.06
24 14 16.0	238	0 31 15.24	31 15.14	1 42 48.4	42 47.7	7.5066	8.349	2.27	3.05
25 14 12.0	239	0 31 10.58	31 10.48	1 42 16.0	42 15.3	7.5138	8.355	2.27	3.04
26 14 8.0	240	0 31 5.84	31 5.74	1 41 43.2	41 42.5	7.5208	8.361	2.26	3.03
27 14 3.9	241	0 31 1.02	31 0.92	1 41 9.9	41 9.2	7.5276	8.366	2.25	3.01
28 13 59.9	242	0 30 56.14	30 56.04	1 40 36.2	40 35.5	7.5339	8.371	2.24	3.00
29 13 55.9	243	0 30 51.18	30 51.08	1 40 2.1	40 1.4	7.5399	8.376	2.23	2.99
30 13 51.9	244	0 30 46.15	30 46.05	1 39 27.6	39 26.9	7.5458	8.381	2.22	2.98
31 13 47.9	245	0 30 41.05	30 40.95	+ 1 38 52.7	38 52.0	−7.5514	−8.386	−2.20	−2.96

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Sept. 1 13 43.9	246	0 30 35.87	30 35.76	+ 1 38 17.5	38 16.7	−7.5569	−8.391	−2.18	−2.95
2 13 39.9	247	0 30 30.65	30 30.54	1 37 41.9	37 41.1	7.5622	8.395	2.17	2.93
3 13 35.8	248	0 30 25.37	30 25.26	1 37 6.0	37 5.2	7.5672	8.399	2.16	2.91
4 13 31.8	249	0 30 20.04	30 19.93	1 36 29.7	36 28.9	7.5720	8.403	2.14	2.89
5 13 27.8	250	0 30 14.64	30 14.53	1 35 53.1	35 52.3	7.5764	8.407	2.13	2.87
6 13 23.8	251	0 30 9.18	30 9.07	1 35 16.2	35 15.4	7.5806	8.411	2.11	2.85
7 13 19.8	252	0 30 3.67	30 3.56	1 34 39.0	34 38.2	7.5846	8.414	2.09	2.83
8 13 15.7	253	0 29 58.11	29 58.00	1 34 1.6	34 0.8	7.5885	8.417	2.07	2.81
9 13 11.7	254	0 29 52.50	29 52.38	1 33 23.9	33 23.1	7.5922	8.420	2.05	2.79
10 13 7.7	255	0 29 46.84	29 46.72	1 32 45.9	32 45.1	7.5957	8.423	2.03	2.77
11 13 3.6	256	0 29 41.14	29 41.02	1 32 7.7	32 6.9	7.5990	8.425	2.01	2.75
12 12 59.6	257	0 29 35.41	29 35.29	1 31 29.3	31 28.5	7.6022	8.427	1.99	2.72
13 12 55.5	258	0 29 29.63	29 29.51	1 30 50.7	30 49.9	7.6051	8.429	1.97	−2.67
14 12 51.5	259	0 29 23.81	29 23.69	1 30 11.9	30 11.1	7.6078	8.431	1.94	
15 12 47.5	260	0 29 17.96	29 17.84	1 29 33.0	29 32.2	7.6103	8.433	1.91	
16 12 43.4	261	0 29 12.07	29 11.95	1 28 53.9	28 53.1	7.6127	8.435	1.88	
17 12 39.4	262	0 29 6.15	29 6.03	1 28 14.6	28 13.8	7.6148	8.437	1.85	
18 12 35.4	263	0 29 0.20	29 0.08	1 27 35.2	27 34.4	7.6167	8.438	1.82	
19 12 31.4	264	0 28 54.23	28 54.11	1 26 55.7	26 54.9	7.6185	8.439	1.78	
20 12 27.3	265	0 28 48.24	28 48.12	1 26 16.0	26 15.2	7.6202	8.440	−1.73	
21 12 23.3	266	0 28 42.22	28 42.10	1 25 36.3	25 35.5	7.6218	8.441		
22 12 19.3	267	0 28 36.18	28 36.06	1 24 56.5	24 55.7	7.6233	8.441		
23 12 15.3	268	0 28 30.13	28 30.01	1 24 16.7	24 15.9	7.6246	8.442		
24 12 11.2	269	0 28 24.06	28 23.94	1 23 36.8	23 36.0	7.6256	8.442		
25 12 7.2	270	0 28 17.97	28 17.85	1 22 56.9	22 56.1	7.6264	8.442		
26 12 3.2	271	0 28 11.87	28 11.75	1 22 17.0	22 16.2	7.6270	8.443		
27 11 59.2	272	0 28 5.77	28 5.65	1 21 37.1	21 36.3	7.6275	8.443		
28 11 55.1	273	0 27 59.66	27 59.54	1 20 57.2	20 56.4	7.6279	8.443		
29 11 51.1	274	0 27 53.54	27 53.42	1 20 17.4	20 16.6	7.6281	8.442		
30 11 47.1	275	0 27 47.42	27 47.30	1 19 37.6	19 36.8	7.6281	8.441		
Oct. 1 11 43.1	276	0 27 41.31	27 41.19	1 18 57.9	18 57.1	7.6279	8.440		
2 11 39.0	277	0 27 35.20	27 35.08	1 18 18.2	18 17.4	7.6277	8.439		
3 11 35.0	278	0 27 29.09	27 28.97	1 17 38.6	17 37.9	7.6273	8.438		
4 11 31.0	279	0 27 22.99	27 22.87	1 16 59.2	16 58.5	7.6267	8.437		
5 11 26.9	280	0 27 16.91	27 16.79	1 16 19.9	16 19.2	7.6259	8.435		
6 11 22.9	281	0 27 10.83	27 10.71	1 15 40.7	15 40.0	7.6248	8.433		
7 11 18.8	282	0 27 4.77	27 4.65	1 15 1.7	15 1.0	7.6235	8.431		
8 11 14.8	283	0 26 58.73	26 58.61	1 14 22.9	14 22.2	7.6221	8.429		
9 11 10.8	284	0 26 52.71	26 52.59	1 13 44.3	13 43.6	7.6204	8.427	+1.74	+2.69
10 11 6.7	285	0 26 46.71	26 46.59	1 13 5.9	13 5.2	7.6186	8.424	1.80	2.74
11 11 2.7	286	0 26 40.74	26 40.63	1 12 27.8	12 27.1	7.6165	8.422	1.84	2.77
12 10 58.7	287	0 26 34.80	26 34.69	1 11 49.9	11 49.2	7.6142	8.419	1.88	2.79
13 10 54.6	288	0 26 28.89	26 28.78	1 11 12.3	11 11.6	7.6118	8.416	1.91	2.81
14 10 50.6	289	0 26 23.01	26 22.90	1 10 34.9	10 34.2	7.6092	8.413	1.94	2.83
15 10 46.5	290	0 26 17.17	26 17.06	1 9 57.8	9 57.1	7.6066	8.410	1.97	2.85
16 10 42.5	291	0 26 11.37	26 11.26	1 9 21.0	9 20.3	7.6038	8.406	1.99	2.87
17 10 38.5	292	0 26 5.61	26 5.50	1 8 44.5	8 43.8	7.6008	8.402	2.02	2.89
18 10 34.4	293	0 25 59.89	25 59.79	1 8 8.4	8 7.7	7.5975	8.398	2.04	2.91
19 10 30.4	294	0 25 54.21	25 54.11	1 7 32.6	7 32.0	7.5940	8.394	2.06	2.93
20 10 26.4	295	0 25 48.58	25 48.48	1 6 57.1	6 56.5	7.5902	8.389	2.08	2.95
21 10 22.4	296	0 25 43.00	25 42.90	1 6 22.0	6 21.4	7.5862	8.384	2.10	2.97
22 10 18.3	297	0 25 37.48	25 37.38	1 5 47.3	5 46.7	7.5820	8.379	2.11	2.98
23 10 14.3	298	0 25 32.01	25 31.91	1 5 13.0	5 12.4	7.5776	8.374	2.13	3.00
24 10 10.3	299	0 25 26.59	25 26.49	1 4 39.1	4 38.5	7.5730	8.369	2.15	3.01
25 10 6.3	300	0 25 21.23	25 21.13	1 4 5.6	4 5.0	7.5682	8.364	2.17	3.03
26 10 2.2	301	0 25 15.93	25 15.84	1 3 32.6	3 32.0	7.5632	8.358	2.18	3.04
27 9 58.2	302	0 25 10.69	25 10.60	1 3 0.0	2 59.5	7.5581	8.352	2.20	3.06
28 9 54.2	303	0 25 5.51	25 5.42	1 2 27.9	2 27.4	7.5528	8.346	2.21	3.07
29 9 50.2	304	0 25 0.40	25 0.31	1 1 56.3	1 55.8	7.5472	8.339	2.22	3.08
30 9 46.2	305	0 24 55.37	24 55.28	1 1 25.1	1 24.6	7.5412	8.332	2.23	3.09
31 9 42.2	306	0 24 50.40	24 50.31	1 0 54.4	0 53.9	7.5349	8.324	2.25	3.10
32 9 38.2	307	0 24 45.50	24 45.42	+ 1 0 24.3	0 23.8	−7.5284	−8.316	+2.26	+3.11

NEPTUNE, 1864.

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log Coefficient of t in Sidereal Minutes.		Log Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d h m	d	h m s	m s	° ′ ″	′ ″				
Nov. 1 9 38.2	307	0 24 45.50	24 45.42	+ 1 0 24.3	0 23.8	−7.5284	−8.316	+2.26	+3 11
2 9 34.1	308	0 24 40.68	24 40.60	0 59 54.8	59 54.3	7.5216	8.308	2.27	3.12
3 9 30.1	309	0 24 35.93	24 35.85	0 59 25.8	59 25.3	7.5145	8.299	2.28	3.13
4 9 26.1	310	0 24 31.26	24 31.18	0 58 57.4	58 57.0	7.5072	8.291	2.29	3.14
5 9 22.1	311	0 24 26.67	24 26.60	0 58 29.5	58 29.1	7.4998	8.282	2.30	3.15
6 9 18.1	312	0 24 22.16	24 22.09	0 58 2.2	58 1.8	7.4919	8.273	2.31	3.16
7 9 14.1	313	0 24 17.74	24 17.67	0 57 35.5	57 35.1	7.4836	8.263	2.32	3.16
8 9 10.1	314	0 24 13.40	24 13.33	0 57 9.4	57 9.0	7.4748	8.253	2.33	3.17
9 9 6.1	315	0 24 9.15	24 9.08	0 56 43.9	56 43.5	7.4658	8.243	2.34	3.18
10 9 2.1	316	0 24 4.99	24 4.92	0 56 19.0	56 18.6	7.4565	8.233	2.35	3.19
11 8 58.1	317	0 24 0.92	24 0.86	0 55 54.7	55 54.3	7.4467	8.222	2.35	3.19
12 8 54.1	318	0 23 56.94	23 56.88	0 55 31.0	55 30.7	7.4363	8.210	2.36	3.20
13 8 50.1	319	0 23 53.05	23 52.99	0 55 8.0	55 7.7	7.4257	8.197	2.37	3.21
14 8 46.2	320	0 23 49.26	23 49.20	0 54 45.7	54 45.4	7.4149	8.184	2.38	3.22
15 8 42.2	321	0 23 45.56	23 45.50	0 54 24.0	54 23.7	7.4034	8.170	2.38	3.22
16 8 38.2	322	0 23 41.97	23 41.91	0 54 3.0	54 2.7	7.3912	8.156	2.39	3.23
17 8 34.2	323	0 23 38.47	23 38.42	0 53 42.7	53 42.4	7.3789	8.141	2.40	3.23
18 8 30.2	324	0 23 35.08	23 35.03	0 53 23.1	53 22.8	7 3658	8.126	2.41	3.24
19 8 26.3	325	0 23 31.79	23 31.74	0 53 4.2	53 3.9	7.3519	8.111	2.41	3.24
20 8 22.3	326	0 23 28.61	23 28.56	0 52 46.0	52 45.8	7.3375	8.093	2.42	3.25
21 8 18.3	327	0 23 25.53	23 25.49	0 52 28.5	52 28.3	7.3224	8.075	2.42	3.25
22 8 14.3	328	0 23 22.56	23 22.52	0 52 11.8	52 11.6	7.3067	8.056	2.43	3.26
23 8 10.4	329	0 23 19.70	23 19.66	0 51 55.8	51 55.6	7.2899	8.036	2 43	3.26
24 8 6.4	330	0 23 16.95	23 16.91	0 51 40.5	51 40.3	7.2723	8.015	2.44	3.26
25 8 2.4	331	0 23 14.31	23 14.27	0 51 26.0	51 25.8	7.2536	7.992	2 44	3.27
26 7 58.4	332	0 23 11.79	23 11.75	0 51 12.3	51 12.1	7.2344	7.967	2.45	3.27
27 7 54.5	333	0 23 9.38	23 9.34	0 50 59.4	50 59.2	7.2137	7.941	2.45	3.27
28 7 50.5	334	0 23 7.09	23 7.05	0 50 47.2	50 47.1	7.1919	7.913	2.45	3.27
29 7 46.5	335	0 23 4.91	23 4.88	0 50 35.8	50 35.7	7.1685	7.883	2.46	3.28
30 7 42.5	336	0 23 2.85	23 2.82	0 50 25.2	50 25.1	7.1438	7.850	2.46	3.28
Dec. 1 7 38.6	337	0 23 0.91	23 0.88	0 50 15.5	50 15.4	7.1170	7.815	2.46	3.28
2 7 34.6	338	0 22 59.09	22 59.06	0 50 6.5	50 6.4	7.0884	7.776	2.47	3.28
3 7 30.6	339	0 22 57.39	22 57.37	0 49 58.3	49 58.2	7.0578	7.734	2.47	3.29
4 7 26.7	340	0 22 55.81	22 55.79	0 49 50.9	49 50.8	7.0249	7.687	2.47	3.29
5 7 22.7	341	0 22 54.34	22 54.32	0 49 44.3	49 44.2	6.9886	7.632	2.47	3.29
6 7 18.8	342	0 22 53.00	22 52.98	0 49 38.5	49 38.5	6.9489	7.672	2.47	3.29
7 7 14.8	343	0 22 51.78	22 51.77	0 49 33.5	49 33.5	6.9052	7.500	2.48	3.29
8 7 10.9	344	0 22 50.69	22 50.68	0 49 29.3	49 29.3	6.8556	7.416	2.48	3.30
9 7 6.9	345	0 22 49.72	22 49.71	0 49 26.0	49 26.0	6.7995	7.308	2.48	3.30
10 7 3.0	346	0 22 48.87	22 48.86	0 49 23.5	49 23.5	6.7351	7.169	2.48	3.30
11 6 59.0	347	0 22 48.15	22 48.14	0 49 21.8	49 21.8	6.6596	6.956	2.48	3.30
12 6 55.1	348	0 22 47.55	22 47.54	0 49 20.9	49 20.9	6.5680	−6.518	2.49	3.30
13 6 51.1	349	0 22 47.08	22 47.08	0 49 20.8	49 20.8	6.4491	+6.386	2.49	3.30
14 6 47.2	350	0 22 46.74	22 46.74	0 49 21.6	49 21.7	6.2888	6.912	2.49	3.30
15 6 43.2	351	0 22 46.52	22 46.52	0 49 23.2	49 23.3	6.0249	7.143	2.49	3.30
16 6 39.3	352	0 22 46.43	22 46.43	0 49 25.6	49 25.7	−5.2396	7.293	2.49	3.30
17 6 35.4	353	0 22 46.47	22 46.47	0 49 28.7	49 28.8	+5.8524	7.404	2.49	3.30
18 6 31.5	354	0 22 46.63	22 46.63	0 49 32.7	49 32.8	6.2034	7.492	2.49	3.30
19 6 27.5	355	0 22 46.92	22 46.93	0 49 37.6	49 37.7	6.3949	7.566	2.49	3.30
20 6 23.6	356	0 22 47.34	22 47.35	0 49 43.3	49 43.4	6.5274	7.629	2.49	3.30
21 6 19.7	357	0 22 47.89	22 47.90	0 49 49.8	49 49.9	6.6288	7.684	2.49	3.30
22 6 15.8	358	0 22 48.56	22 48.57	0 49 57.2	49 57.4	6.7109	7.732	2 49	3.30
23 6 11.8	359	0 22 49.36	22 49.37	0 50 5.4	50 5.6	6.7799	7.776	2.49	3.30
24 6 7.9	360	0 22 50.29	22 50.31	0 50 14.4	50 14.6	6.8395	7.816	2.49	3.30
25 6 4.0	361	0 22 51.35	22 51.37	0 50 24.2	50 24.4	6.8918	7.852	2.49	3.30
26 6 0.1	362	0 22 52.53	22 52.55	0 50 34.9	50 35.1	6.9386	7.886	2.49	3.30
27 5 56.2	363	0 22 53.84	22 53.86	0 50 46.4	50 46.6	6.9808	7.917	2 49	3.30
28 5 52.3	364	0 22 55.28	22 55.30	0 50 58.7	50 58.9	7.0192	7.946	2.49	3.30
29 5 48.4	365	0 22 56.85	22 56.87	0 51 11.8	51 12.0	7.0538	7.974	2.49	3.30
30 5 44.5	366	0 22 58.54	22 58.57	0 51 25.8	51 26.1	7.0866	7.999	2.49	3.30
31 5 40.6	367	0 23 0.36	23 0.39	0 51 40.6	51 40.9	7.1170	8.023	2.49	3.30
32 5 36.7	368	0 23 2.31	23 2.34	+ 0 51 56.2	51 56.5	+7.1449	+8.046	+2.48	+3.30

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

0ʰ Sidereal Date.	HORIZONTAL PARALLAXES.			VERTICAL SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
d	″	″	″	″	″	″	s	s	s
1	7.40	10.07	3.74	2.88	10.03	2.20	0.21	0.69	0.16
6	8.20	9.65	3.77	3.19	9.61	2.22	0.23	0.66	0.16
11	9.40	9.27	3.81	3.66	9.23	2.24	0.26	0.64	0.16
16	10.95	8.94	3.86	4.26	8.90	2.26	0.30	0.63	0.16
21	12.44	8.61	3.91	4.84	8.58	2.29	0.34	0.61	0.17
26	13.04	8.32	3.96	5.07	8.29	2.32	0.35	0.59	0.17
31	12.47	8.05	4.01	4.85	8.02	2.36	0.34	0.57	0.17
36	11.36	7.80	4.07	4.42	7.77	2.39	0.31	0.55	0.17
41	10.26	7.57	4.14	3.99	7.54	2.43	0.28	0.54	0.18
46	9.33	7.35	4.20	3.63	7.33	2.46	0.26	0.52	0.18
51	8.60	7.16	4.26	3.35	7.13	2.50	0.24	0.50	0.18
56	8.01	6.98	4.33	3.12	6.96	2.54	0.22	0.49	0.18
61	7.55	6.83	4.40	2.94	6.80	2.58	0.21	0.47	0.18
66	7.18	6.65	4.47	2.79	6.64	2.63	0.19	0.46	0.19
71	6.89	6.50	4.54	2.68	6.48	2.68	0.18	0.45	0.19
76	6.66	6.35	4.62	2.59	6.34	2.72	0.18	0.43	0.19
81	6.49	6.24	4.70	2.53	6.23	2.77	0.17	0.42	0.20
86	6.39	6.11	4.77	2.49	6.10	2.82	0.17	0.41	0.20
91	6.37	6.00	4.86	2.48	6.00	2.87	0.17	0.40	0.20
96	6.47	5.90	4.95	2.52	5.90	2.92	0.17	0.39	0.20
101	6.73	5.80	5.04	2.62	5.77	2.97	0.18	0.38	0.20
106	7.21	5.71	5.13	2.80	5.68	3.03	0.19	0.38	0.21
111	7.94	5.62	5.23	3.09	5.59	3.08	0.22	0.37	0.21
116	8.92	5.55	5.32	3.47	5.53	3.13	0.25	0.37	0.21
121	10.17	5.47	5.42	3.96	5.45	3.19	0.29	0.36	0.22
126	11.59	5.40	5.52	4.51	5.37	3.25	0.33	0.36	0.22
131	13.10	5.33	5.62	5.10	5.31	3.31	0.37	0.36	0.22
136	14.47	5.26	5.72	5.63	5.25	3.37	0.41	0.36	0.22
141	15.40	5.22	5.83	5.99	5.20	3.44	0.43	0.36	0.23
146	15.59	5.17	5.95	6.07	5.15	3.51	0.43	0.36	0.23
151	15.02	5.12	6.06	5.85	5.10	3.57	0.41	0.36	0.23
156	13.91	5.08	6.19	5.42	5.07	3.64	0.38	0.36	0.24
161	12.58	5.05	6.32	4.89	5.03	3.72	0.34	0.36	0.25
166	11.22	5.02	6.45	4.37	5.01	3.79	0.30	0.36	0.25
171	9.97	4.99	6.58	3.89	4.99	3.87	0.27	0.36	0.26
176	8.90	4.98	6.72	3.46	4.97	3.96	0.24	0.36	0.26
181	8.00	4.96	6.87	3.11	4.95	4.05	0.22	0.36	0.27
186	7.30	4.95	7.02	2.84	4.94	4.13	0.21	0.36	0.28
191	6.80	4.95	7.17	2.65	4.93	4.22	0.19	0.36	0.28
196	6.51	4.95	7.33	2.53	4.93	4.32	0.18	0.36	0.29
201	6.41	4.95	7.50	2.49	4.94	4.42	0.18	0.36	0.30
206	6.44	4.95	7.68	2.51	4.94	4.53	0.18	0.35	0.31
211	6.59	4.96	7.88	2.57	4.95	4.64	0.18	0.35	0.32
216	6.82	4.97	8.08	2.65	4.95	4.76	0.18	0.35	0.33
221	7.11	4.98	8.30	2.77	4.97	4.90	0.19	0.35	0.34
226	7.48	5.01	8.53	2.91	4.99	5.03	0.20	0.34	0.35
231	7.92	5.03	8.77	3.08	5.02	5.17	0.21	0.34	0.35
236	8.46	5.06	9.03	3.29	5.05	5.32	0.22	0.34	0.36
241	9.11	5.09	9.31	3.55	5.08	5.48	0.24	0.34	0.38
246	9.90	5.12	9.61	3.85	5.11	5.65	0.26	0.34	0.40
251	10.83	5.17	9.92	4.22	5.16	5.84	0.28	0.34	0.41
256	11.88	5.22	10.27	4.62	5.20	6.05	0.31	0.35	0.43
261	12.84	5.27	10.64	5.00	5.26	6.28	0.34	0.35	0.45
266	13.23	5.33	11.03	5.15	5.30	6.52	0.34	0.36	0.47
271	12.62	5.39	11.44	4.91	5.37	6.75	0.33	0.36	0.48
276	11.16	5.45	11.88	4.34	5.43	6.99	0.29	0.37	0.50
281	9.56	5.53	12.35	3.72	5.49	7.26	0.25	0.38	0.52
286	8.27	5.59	12.83	3.22	5.58	7.56	0.21	0.39	0.54
291	7.38	5.68	13.33	2.87	5.66	7.86	0.19	0.40	0.57
296	6.79	5.75	13.83	2.64	5.73	8.16	0.18	0.40	0.59

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

0h Sidereal Date.	HORIZONTAL PARALLAXES.			VERTICAL SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
d	″	″	″	″	″	″	s	s	s
301	6.40	5.84	14.34	2.49	5.83	8.46	0.17	0.42	0.61
306	6.16	5.95	14.84	2.39	5.94	8.74	0.16	0.43	0.63
311	6.01	6.05	15.26	2.34	6.02	9.00	0.16	0.44	0.65
316	5.94	6.16	15.63	2.31	6.13	9.21	0.16	0.45	0.67
321	5.93	6.27	15.90	2.31	6.26	9.36	0.16	0.46	0.68
326	5.98	6.39	16.04	2.33	6.38	9.44	0.17	0.47	0.68
331	6.09	6.53	16.05	2.37	6.52	9.46	0.17	0.48	0.69
336	6.26	6.68	15.92	2.44	6.65	9.37	0.18	0.49	0.69
341	6.53	6.83	15.63	2.54	6.80	9.21	0.19	0.50	0.67
346	6.92	6.99	15.23	2.69	6.95	8.98	0.20	0.50	0.65
351	7.47	7.16	14.73	2.91	7.15	8.68	0.21	0.51	0.63
356	8.27	7.36	14.13	3.22	7.32	8.34	0.23	0.52	0.61
361	9.42	7.55	13.54	3.67	7.52	7.97	0.26	0.53	0.58
366	10.90	7.77	12.89	4.24	7.75	7.61	0.30	0.54	0.56
0h Sidereal Date.	♃	♄	♅	♃	♄	♅	♃	♄	♅
d	″	″	″	″	″	″	s	s	s
1	1.43	0.88	0.47	16.04	8.08	1.85	1.16	0.53	0.12
11	1.46	0.90	0.47	16.41	8.22	1.84	1.19	0.54	0.12
21	1.50	0.91	0.47	16.83	8.36	1.83	1.22	0.55	0.12
31	1.54	0.93	0.46	17.29	8.50	1.82	1.25	0.56	0.12
41	1.59	0.94	0.46	17.80	8.64	1.81	1.29	0.57	0.12
51	1.63	0.96	0.46	18.35	8.77	1.80	1.33	0.58	0.12
61	1.69	0.97	0.46	18.93	8.87	1.79	1.38	0.59	0.12
71	1.74	0.98	0.45	19.51	8.96	1.78	1.42	0.59	0.12
81	1.79	0.99	0.45	20.09	9.01	1.76	1.46	0.60	0.12
91	1.84	0.99	0.45	20.65	9.04	1.74	1.50	0.60	0.12
101	1.88	0.99	0.44	21.14	9.04	1.73	1.53	0.60	0.11
111	1.92	0.99	0.44	21.52	9.00	1.71	1.56	0.60	0.11
121	1.95	0.98	0.44	21.80	8.94	1.70	1.58	0.59	0.11
131	1.96	0.97	0.44	21.95	8.85	1.69	1.59	0.59	0.11
141	1.96	0.96	0.43	21.93	8.74	1.68	1.59	0.58	0.11
151	1.94	0.95	0.43	21.77	8.61	1.68	1.57	0.57	0.11
161	1.92	0.93	0.43	21.48	8.47	1.67	1.55	0.56	0.11
171	1.88	0.92	0.43	21.08	8.33	1.67	1.52	0.55	0.11
181	1.84	0.90	0.43	20.60	8.19	1.67	1.48	0.54	0.11
191	1.79	0.89	0.43	20.07	8.05	1.68	1.44	0.53	0.11
201	1.74	0.87	0.44	19.51	7.92	1.68	1.40	0.53	0.11
211	1.69	0.86	0.44	18.94	7.80	1.69	1.36	0.52	0.11
221	1.64	0.85	0.44	18.39	7.69	1.70	1.32	0.51	0.12
231	1.59	0.83	0.45	17.87	7.59	1.71	1.29	0.50	0.12
241	1.55	0.82	0.45	17.39	7.50	1.72	1.26	0.50	0.12
251	1.51	0.82	0.45	16.94	7.43	1.73	1.23	0.49	0.12
261	1.48	0.81	0.45	16.55	7.38	1.75	1.20	0.49	0.12
271	1.45	0.81	0.46	16.20	7.34	1.77	1.18	0.49	0.12
281	1.42	0.80	0.46	15.91	7.31	1.78	1.16	0.48	0.12
291	1.40	0.80	0.46	15.67	7.31	1.80	1.15	0.48	0.12
301	1.38	0.80	0.46	15.46	7.33	1.81	1.14	0.49	0.12
311	1.37	0.81	0.47	15.33	7.36	1.83	1.13	0.49	0.12
321	1.36	0.81	0.47	15.24	7.41	1.84	1.13	0.49	0.12
331	1.36	0.82	0.47	15.21	7.47	1.85	1.13	0.49	0.12
341	1.36	0.83	0.47	15.23	7.55	1.85	1.13	0.50	0.12
351	1.36	0.84	0.48	15.31	7.65	1.86	1.14	0.51	0.12
361	1.37	0.85	0.48	15.42	7.76	1.86	1.15	0.51	0.12
371	1.40	0.86	0.48	15.60	7.89	1.86	1.16	0.52	0.12

NOTE. — For Neptune the Horizontal Parallax = 0″.28 (between 13d. and 166d.)
" " " " = 0″.29 (before 13d., between 166d. and 232d. and after 314d.)
" " " " = 0″.30 (between 232d. and 314d.)

Date, 1864.	RECTANGULAR EQUATORIAL						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ. 9.9
Jan. 1.0	+.1812315	1612	—.8865250	5259	—.3846483	6773	280° 37′ 18″.2	3″.2	0″.00	926515
1.5	.1898225	7518	.8850145	0162	.3839927	:0220	281 7 53.3	38.3	+0.05	926533
2.0	.1983989	3279	.8834351	4376	.3833071	3366	281 38 28.4	13.3	0.11	926557
2.5	.2069602	8889	.8817868	7901	.3825917	6215	282 8 63.6	48.4	0.16	926586
3.0	.2155057	4341	.8800696	0737	.3818463	8763	282 39 38.8	23.5	0.22	926620
3.5	+.2240347	:9628	—.8782837	2886	—.3810711	1014	283 9 74.0	58.6	+0.28	926659
4.0	.2325466	4745	.8764292	4349	.3802662	2967	283 40 49.2	33.7	0.34	926703
4.5	.2410406	:9683	.8745063	5128	.3794314	4622	284 11 24.5	8.9	0.40	926752
5.0	.2495161	4436	.8725150	5223	.3785671	5981	284 41 59.8	44.1	0.46	926805
5.5	.2579724	8997	.8704554	4635	.3776731	7044	285 12 35.2	19.5	0.52	926862
6.0	+.2664088	3359	—.8683277	3366	—.3767496	7811	285 42 70.5	54.7	+0.58	926923
6.5	.2748246	7515	.8661322	1419	.3757967	8285	286 13 45.8	30.0	0.63	926989
7.0	.2832191	1459	.8638687	8791	.3748144	8464	286 44 21.1	5.2	0.68	927060
7.5	.2915917	5183	.8615376	6488	.3738028	9351	287 14 56.4	40.4	0.73	927135
8.0	.2999416	8681	.8591391	1511	.3727619	7944	287 45 31.7	15.6	0.77	927214
8.5	+.3082681	1945	—.8566733	6861	—.3716919	7246	288 15 66.9	50.7	+0.81	927297
9.0	.3165705	4968	.8541405	1540	.3705928	6257	288 46 42.1	25.8	0.84	927384
9.5	.3248481	7743	.8515408	5551	.3694648	4980	289 17 17.2	0.8	0.87	927475
10.0	.3331002	0263	.8488747	8898	.3683079	3413	289 47 52.2	35.7	0.89	927571
10.5	.3413262	2522	.8461423	1582	.3671223	1559	290 18 27.1	10.6	0.90	927671
11.0	+.3495253	4513	—.8433438	3604	—.3659081	9419	290 48 61.8	45.2	+0.90	927775
11.5	.3576368	6227	.8404795	4969	.3646654	6995	291 19 36.3	19.7	0.89	927883
12.0	.3658399	7657	.8375499	5680	.3633943	4286	291 49 70.6	53.9	0.88	927996
12.5	.3739541	8798	.8345550	5739	.3620949	1294	292 20 44.8	28.0	0.86	928113
13.0	.3820389	:9646	.8314949	5145	.3607673	8020	292 51 18.8	1.9	0.84	928235
13.5	+.3900936	0192	—.8283702	3906	—.3594117	4467	293 21 52.7	35.7	+0.80	928361
14.0	.3981175	0431	.8251810	2021	.3580281	0633	293 52 26.4	9.3	0.76	928492
14.5	.4061100	0355	.8219276	9495	.3566168	6522	294 22 59.9	42.7	0.71	928628
15.0	.4140705	:9960	.8186104	6331	.3551778	2134	294 53 33.2	15.9	0.66	928769
15.5	.4219986	9241	.8152298	2533	.3537113	7472	295 23 66.3	49.0	0.60	928915
16.0	+.4298935	8190	—.8117858	8100	—.3522174	2535	295 54 39.2	21.8	+0.54	929067
16.5	.4377546	6801	.8082791	3041	.3506962	7325	296 24 71.9	54.5	0.48	929224
17.0	.4455815	5070	.8047096	7353	.3491479	1844	296 55 44.3	26.8	0.41	929387
17.5	.4533735	2990	.8010779	1044	.3475726	6094	297 25 76.5	58.9	0.35	929556
18.0	.4611300	0555	.7973842	4115	.3459703	:0073	297 56 48.5	30.8	0.28	929730
18.5	+.4688505	7760	—.7936288	6569	—.3443414	3786	298 27 20.3	2.5	+0.21	929911
19.0	.4765344	4600	.7898121	8410	.3426857	7231	298 57 51.9	34.0	0.14	930098
19.5	.4841811	1067	.7859344	9641	.3410036	0413	299 28 23.3	5.3	0.07	930291
20.0	.4917900	7157	.7819960	:0265	.3392951	3330	299 58 54.4	36.3	+0.01	930490
20.5	.4993607	2865	.7779973	:0286	.3375604	5985	300 29 25.3	7.2	—0.05	930695
21.0	+.5068927	8186	—.7739385	9706	—.3357997	8380	300 59 56.0	37.8	—0.11	930907
21.5	.5143855	3115	.7698201	8530	.3340131	0517	301 30 26.5	8.3	0.16	931126
22.0	.5218384	7645	.7656423	6761	.3322007	2395	302 0 56.8	38.5	0.21	931352
22.5	.5292510	1772	.7614056	4402	.3303627	4017	302 31 26.8	8.5	0.25	931584
23.0	.5366227	5490	.7571101	1456	.3284992	5384	303 1 56.6	38.2	0.28	931823
23.5	+.5439529	8793	—.7527564	7927	—.3266103	6497	303 32 26.2	7.7	—0.31	932069
24.0	.5512411	1677	.7483446	3818	.3246963	7359	304 2 55.6	37.0	0.33	932322
24.5	.5584868	4136	.7438752	9132	.3227572	7971	304 33 24.8	6.1	0.34	932582
25.0	.5656894	6163	.7393483	3871	.3207930	8331	305 3 53.8	35.0	0.34	932848
25.5	.5728484	7755	.7347644	8040	.3188041	8444	305 34 22.5	3.7	0.33	933120
26.0	+.5799634	8907	—.7301238	1642	—.3167905	8310	306 4 51.0	32.1	—0.32	933399
26.5	.5870339	:9614	.7254268	4680	.3147525	7932	306 35 19.4	0.5	0.30	933684
27.0	.5940592	:9869	.7206736	7157	.3126900	7309	307 5 47.6	28.6	0.28	933975
27.5	.6010389	:9668	.7158647	9076	.3106031	6442	307 35 75.5	56.5	0.25	934273
28.0	.6079726	9007	.7110004	0441	.3084926	5339	308 6 43.2	24.1	0.21	934576
28.5	+.6148596	7879	—.7060811	1256	—.3063581	3996	308 36 70.8	51.6	—0.17	934885
29.0	.6216995	6281	.7011070	1524	.3041996	2413	309 7 38.2	18.9	0.12	935200
29.5	.6284918	4206	.6960786	1248	.3020176	0595	309 37 65.5	46.1	—0.06	935520
30.0	.6352358	1649	.6909961	:0431	.2998121	8542	310 8 32.6	13.1	0.00	935846
30.5	.6419310	8604	.6858600	9078	.2975834	6257	310 38 59.6	40.1	+0.06	936177
31.0	+.6485771	5068	—.6806706	7193	—.2953315	3739	311 9 26.3	6.7	+0.12	936513

Note. — The accented letters correspond to the mean equinox and equator of January 0d.0.

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	9.9
Jan. 31.5	+.6551734	1034	—.6754283	4778	—.2930567	0993	311 39 52.8	33.2	+0.18	936854
Feb. 1.0	.6617192	6495	.6701336	1839	.2907591	8018	312 19 79.1	59.4	0.24	937198
1.5	.6682140	1446	6647868	8379	.2884388	4817	312 40 45.2	25.5	0.30	937547
2.0	.6746574	5883	.6593883	4403	.2860962	1392	313 10 71.0	51.2	0.36	937900
2.5	.6810488	:9800	.6539384	9912	.2837313	7745	313 41 36.6	16.8	0.42	938257
3.0	+.6873878	3194	—.6484378	4914	—.2813444	3878	314 11 62.0	42.1	+0.48	938618
3.5	.6936738	6957	.6428867	9411	.2789356	9792	314 42 27.2	7.2	0.53	938983
4.0	.6999063	8386	.6372854	3406	.2765051	5488	315 12 52.2	32.1	0.58	939351
4.5	.7060848	0175	.6316347	6907	.2740530	0969	315 42 77.0	56.9	0.62	937723
5.0	.7122087	1418	.6259348	9916	.2715797	6237	316 13 41.5	20.3	0.66	940098
5.5	+.7182775	2110	—.6201863	2439	—.2690854	1296	316 43 65.6	44.4	+0.69	940476
6.0	.7242907	2246	.6143897	4481	.2665703	6146	317 14 29.3	9.0	0.71	940857
6.5	.7302478	1821	.6085454	6046	.2640345	0790	317 44 52.8	32.5	0.72	941240
7.0	.7361482	0830	.6026540	7140	.2614783	5229	318 14 76.0	55.6	0.73	941627
7.5	.7419916	9268	.5967159	7767	.2589018	9466	318 45 38.9	18.5	0.73	942017
8.0	+.7477775	7132	—.5907316	7932	—.2563054	3503	319 15 61.4	40.9	+0.72	942409
8.5	.7535055	4417	.5847016	7640	.2536892	7343	319 46 23.7	3.1	0.70	942804
9.0	.7591750	1117	.5786265	6897	.2510534	0986	320 16 45.5	24.8	0.68	943202
9.5	.7647857	7229	.5725068	5708	.2483983	4436	320 46 66.9	46.2	0.65	943603
10.0	.7703373	2750	.5663429	4077	.2457241	7695	321 17 28.0	7.2	0.62	944007
10.5	+.7758293	7675	—.5601356	2012	—.2430311	0767	321 47 48.7	27.9	+0.58	944414
11.0	.7812612	2900	.5538851	9515	.2403194	3651	322 17 68.9	48.0	0.53	944825
11.5	.7866327	5720	.5475922	6594	.2375893	6351	322 48 28.8	7.8	0.48	945238
12.0	.7919433	8832	.5412573	3252	.2348411	8870	323 18 48.2	27.2	0.42	945655
12.5	.7971926	1331	.5348810	9497	.2320749	1210	323 48 67.2	46.2	0.35	946075
13.0	+.8023804	3215	—.5284637	5332	—.2292910	3372	324 19 25.8	4.7	+0.28	946498
13.5	.8075063	4480	.5220062	0765	.2264895	5358	324 49 44.0	22.8	0.21	946925
14.0	.8125700	5123	.5155087	5797	.2236708	7172	325 19 61.7	40.4	0.14	947356
14.5	.8175711	5140	.5089720	:0438	.2208350	8816	325 49 79.0	57.7	+0.07	947790
15.0	.8225093	4528	.5023966	4691	.2179824	:0291	326 20 35.8	14.4	0.00	948228
15.5	+.8273842	3283	—.4957830	8563	—.2151132	1600	326 50 52.2	30.8	—0.07	948670
16.0	.8321955	1403	.4891318	2058	.2122277	2746	327 20 63.1	46.6	0.14	949117
16.5	.8369429	8883	.4824435	5183	.2093266	3730	327 51 23.5	1.9	0.20	949568
17.0	.8416261	5722	.4757187	7942	.2064085	4556	328 21 38.5	16.9	0.26	950023
17.5	.8462449	1916	.4689579	:0342	.2034754	5226	328 51 53.0	31.3	0.31	950483
18.0	+.8507989	7463	—.4621615	2385	—.2005269	5742	329 21 67.1	45.4	—0.36	950947
18.5	.8552879	2359	.4553302	4080	.1975631	6105	329 51 80.7	58.9	0.40	951415
19.0	.8597115	6602	.4484643	5428	.1945843	6318	330 22 33.9	12.0	0.44	951887
19.5	.8640696	0190	.4415646	6438	.1915907	6383	330 52 46.6	24.7	0.47	952364
20.0	.8683619	3120	.4346313	7112	1885826	6303	331 22 58.9	36.9	0.49	952847
20.5	+.8725881	5389	—.4276652	7459	—.1855602	6080	331 52 70.7	48.7	—0.50	953335
21.0	.8767478	6993	.4206665	7479	.1825236	5715	332 23 22.1	0.0	0.51	953828
21.5	.8808409	7931	.4136360	7181	.1794732	5212	332 53 33.1	11.0	0.51	954326
22.0	.8848672	8201	.4065741	6569	.1764091	4572	333 23 43.7	21.5	0.50	954828
22.5	.8888263	7799	.3994814	5649	.1733315	3797	333 53 53.9	31.7	0.48	955335
23.0	+.8927180	6723	—.3923583	4425	—.1702408	2891	334 23 63.7	41.4	—0.46	955847
23.5	.8965421	4971	.3852053	2902	.1671370	1854	334 53 73.0	50.7	0.43	956364
24.0	.9002982	2539	.3780230	1085	.1640205	0689	335 23 81.9	59.5	0.40	956886
24.5	.9039862	9426	.3708117	8979	.1608914	9399	335 54 30.5	8.1	0.36	957412
25.0	.9076057	5628	.3635723	6592	.1577502	7988	336 24 38.7	16.2	0.31	957943
25.5	+.9111565	1143	—.3563051	3927	—.1545968	6455	336 54 46.5	24.0	—0.26	·958478
26.0	.9146383	5969	.3490105	0987	.1514316	4803	337 24 53.9	31.3	0.20	959017
26.5	·9180508	0101	.3416892	7781	.1482547	3035	337 54 60.9	38.3	0.14	959561
27.0	.9213938	3539	.3343419	4314	.1450665	1153	338 24 67.5	44.8	0.08	960106
27.5	.9246672	6281	.3269689	:0581	.1418671	9159	338 54 73.7	51.0	—0.02	960656
28.0	+.9278704	8321	—.3195707	6615	—.1386569	7057	339 24 79.6	56.8	+0.04	961209
28.5	.9310033	:9658	.3121481	2396	.1354360	4848	339 55 25.1	2.3	0.10	961766
29.0	.9340656	0289	.3047013	7934	·1322047	2536	340 25 30.1	7.2	0.16	962325
29.5	.9370572	0213	.2972311	3238	·1289632	:0121	340 55 34.8	11.9	0.22	962887
Mar. 1.0	.9399778	9428	.2897379	8312	·1257118	7607	341 25 39.1	16.1	0.28	963451
1.5	+.9428271	7929	—.2822223	3162	—.1224507	4907	341 55 43.0	20.0	+0.33	964018

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Mar. 2.0	+.9456048	5715	—.2746849	7794	—.1191800	2290	342° 25′ 46″.6	23″.5	+0″.38	9.9 964587
2.5	.9483108	2783	.2671262	2213	.1159003	9493	342 55 49.8	26.7	0.42	965157
3.0	.9509449	9133	2595470	6427	.1126113	6603	343 25 52.6	29.4	0.46	965729
3.5	.9535069	4761	.2519477	:0440	.1093138	3629	343 55 55.0	31.8	0.49	966304
4.0	.9559965	9666	.2443289	4258	.1060079	0570	344 25 57.0	33.7	0.52	966880
4.5	+.9584136	3846	—.2366913	7888	—.1026939	7430	344 55 58.6	35.3	+0.54	967457
5.0	.9607580	7299	.2290355	1335	.0993721	4212	345 25 59.7	36.3	0.55	968036
5.5	.9630294	0021	.2213621	4606	.0960427	0918	345 55 60.3	36.9	0.55	968616
6.0	.9652276	2012	.2136717	7707	.0927061	7552	346 25 60.5	37.0	0.55	969196
6.5	.9673525	3270	.2059651	:0646	.0893624	4115	346 55 60.2	36.7	0.54	969777
7.0	+.9694040	3794	—.1982427	3427	—.0860119	0610	347 25 59.5	35.9	+0.52	970359
7.5	.9713818	3580	.1905052	6057	.0826548	7039	347 55 58.3	34.7	0.50	970941
8.0	.9732859	2630	.1827532	8542	.0792916	3407	348 25 56.6	32.9	0.46	971523
8.5	.9751161	0941	.1749874	:0889	.0759223	9714	348 55 54.4	30.7	0.42	972106
9.0	.9768724	8513	.1672085	3104	.0725474	5965	349 25 51.8	28.0	0.37	972690
9.5	+.9785547	5345	—.1594171	5194	—.0691670	2161	349 55 48.7	24.9	+0.32	973274
10.0	.9801629	0436	.1516137	7164	.0657815	8305	350 25 45.0	21.2	0.26	973858
10.5	.9816969	6785	.1437991	9024	.0623911	4401	350 55 40.7	16.9	0.20	974443
11.0	.9831566	1392	.1359737	:0772	.0589961	:0450	351 25 35.9	12.0	0.14	975029
11.5	.9845420	5255	.1281383	2422	.0555969	6458	351 55 30.6	6.7	+0.07	975615
12.0	+.9858530	8374	—.1202933	3076	—.0521934	2422	352 25 24.8	0.8	—0.01	976202
12.5	.9870896	:0749	.1124394	5441	.0487861	8349	352 54 78.5	54.5	0.08	976789
13.0	.9882518	2381	.1045774	6824	.0453753	4240	353 24 71.6	47.5	0.15	977377
13.5	.9893395	3267	.0967077	8131	.0419612	:0098	353 54 64.1	40.0	0.22	977965
14.0	.9903527	3409	.0888313	9370	.0385441	5926	354 24 56.0	31.8	0.29	978555
14.5	+.9912913	2805	—.0809485	:0545	—.0351242	1726	354 54 47.4	23.2	—0.35	979146
15.0	.9921553	1455	.0730602	1665	.0317020	7503	355 24 38.2	14.0	0.41	979739
15.5	.9929448	9360	.0651669	2735	.0282775	3257	355 54 28.4	4.2	0.47	980333
16.0	.9936599	6521	.0572690	3759	.0248510	8991	356 23 78.0	53.7	0.52	980929
16.5	.9943006	2938	.0493674	4746	.0214228	4708	356 53 67.0	42.7	0.56	981526
17.0	+.9948669	8611	—.0414624	5699	—.0179931	:0410	357 23 55.5	31.2	—0.60	982125
17.5	.9953588	3540	.0335547	6625	.0145622	6100	357 53 43.4	19.0	0.63	982726
18.0	.9957763	7725	.0256448	7529	.0111303	1780	358 23 30.7	6.2	0.66	983328
18.5	.9961196	1168	.0177333	8417	.0076976	7052	358 52 77.5	53.0	0.67	983932
19.0	.9963887	3870	.0098207	9293	.0042645	3120	359 22 63.7	39.1	0.68	984539
19.5	+.9965837	5830	—.0019076	:0165	—.0008311	8785	359 52 49.4	24.8	—0.68	985148
20.0	.9967045	7048	+.0060055	:8963	+.0026023	5550	0 22 34.5	9.9	0.67	965758
20.5	.9967512	7525	.0139180	8085	.0060355	:9883	0 51 79.1	54.5	0.66	986371
21.0	.9967239	7263	.0218293	7196	.0094681	4211	1 21 63.1	38.4	0.64	986986
21.5	.9966225	6259	.0297390	6290	.0129001	8532	1 51 46.6	21.9	0.61	987604
22.0	+.9964471	4516	+.0376462	5360	+.0163311	2844	2 21 29.6	4.8	—0.58	988223
22.5	.9961979	2035	.0455507	4402	.0197609	7143	2 50 72.2	47.4	0.54	988844
23.0	.9958749	8816	.0534518	3412	.0231893	1429	3 20 54.3	29.4	0.50	989468
23.5	.9954781	4858	.0613490	2381	.0266161	5698	3 50 35.7	10.8	0.45	990094
24.0	.9950075	0163	.0692418	1307	.0300409	:9948	4 19 76.6	51.6	0.40	990722
24.5	+.9944632	4731	+.0771295	0182	+.0334636	4176	4 49 57.1	32.1	—0.35	991352
25.0	.9938452	8562	.0850117	:9002	.0368838	8380	5 19 37.1	12.1	0.29	991984
25.5	.9931536	1657	.0928877	7760	.0403014	2557	5 48 76.6	51.6	0.23	992618
26.0	.9923885	4017	.1007571	6453	.0437161	6706	6 18 55.7	30.6	0.16	993253
26.5	.9915498	5641	.1086194	5074	.0471279	0826	6 48 34.3	9.2	0.10	993890
27.0	+.9906377	6531	+.1164738	3617	+.0505362	4911	7 17 72.5	47.3	—0.03	994528
27.5	.9896523	6688	.1243201	2078	.0539408	8958	7 47 50.2	25.0	+0.04	995167
28.0	.9885936	6112	.1321573	0449	.0573415	2967	8 17 27.5	2.2	+0.10	995807
28.5	.9874616	4803	.1399852	8726	.0607382	6936	8 46 64.3	39.0	0.16	996447
29.0	.9862563	2761	.1478030	6903	.0641306	0862	9 16 40.7	15.3	0.21	997088
29.5	+.9849779	9988	+.1556102	4974	+.0675184	4742	9 45 76.6	51.2	+0.26	997729
30.0	.9836265	6485	.1634062	2933	.0709012	8572	10 15 52.1	26.6	0.30	998369
30.5	.9822021	2252	.1711906	0776	.0742788	2350	10 45 27.1	1.6	0.34	999010
31.0	.9807048	7290	.1789625	8495	.0776511	6076	11 14 61.7	36.1	0.37	999651
31.5	.9791348	1601	.1867217	6086	.0810179	:9746	11 44 35.9	10.3	0.39	☞000291
Apr. 1.0	+.9774921	5185	+.1944673	3542	+.0843786	3355	12 13 69.6	43.9	+0.41	000930

☞ The first figures of this and the following logarithms are 0.0.

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.			λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							°	′	″	″	″	0.0
Apr. 1.5	+.9757769	8044	+.2021989	0857	+.0877333	6904	12	43	42.9	17.2	+0.42	001568
2.0	.9739893	:0180	.2099159	8027	.0910815	0389	13	12	75.7	49.9	0.42	002205
2.5	.9721295	1593	2176176	5044	.0944232	3808	13	42	48.0	22.2	0.41	002841
3.0	.9701975	2284	.2253034	1902	.0977578	7156	14	11	79.9	54.0	0.39	003475
3.5	.9681935	2255	.2329729	8597	.1010854	0434	14	41	51.4	25.5	0.37	004108
4.0	+.9661177	1508	+.2406251	5119	+.1044054	3636	15	10	82.4	56.5	+0.34	004739
4.5	.9639703	:0045	.2482599	1467	.1077179	6763	15	40	52.9	27.0	0.30	005369
5.0	.9617515	7868	.2558762	7630	.1110221	:9807	16	9	83.0	57.0	0.26	005996
5.5	.9594614	4978	.2634738	3606	.1143183	2769	16	39	52.6	26.6	0.21	006621
6.0	.9571002	1377	.2710520	:9387	.1176059	5650	17	8	81.7	55.6	0.16	007244
6.5	+.9546682	7067	+.2786101	4968	+.1208850	8443	17	38	50.2	24.1	+0.10	007865
7.0	.9521656	2052	.2861476	0343	.1241549	1145	18	7	78.1	51.9	+0.03	008483
7.5	.9495926	6333	.2936638	5505	.1274158	3756	18	37	45.5	19.3	—0.03	009099
8.0	.9469494	9912	.3011581	0448	.1306670	6271	19	6	72.5	46.2	0.09	009713
8.5	.9442364	2793	.3086300	5167	.1339086	8689	19	36	39.0	12.7	0.15	010324
9.0	+.9414537	4977	+.3160789	:9656	+.1371402	1008	20	5	64.9	38.5	—0.22	010933
9.5	.9386015	6466	.3235043	3910	.1403616	3224	20	35	30.2	3.8	0.29	011540
10.0	.9356802	7264	.3309055	7922	.1435725	5336	21	4	54.9	28.4	0.36	012145
10.5	.9326902	7375	.3382822	1689	.1467729	7342	21	33	79.1	52.6	0.42	012748
11.0	.9296317	6801	.3456337	5205	.1499622	9238	22	3	42.8	16.2	0.48	013349
11.5	+.9265049	5544	+.3529595	8463	+.1531405	1023	22	32	66.0	39.4	—0.54	013948
12.0	.9233103	3610	.3602591	1460	.1563073	2694	23	2	28.5	1.8	0.59	014545
12.5	.9200482	1000	.3675319	4189	.1594626	4250	23	31	50.5	23.8	0.64	015141
13.0	.9167188	7717	.3747775	6646	.1626061	5688	24	0	72.0	45.2	0.68	015735
13.5	.9133224	3764	.3819953	8825	.1657375	7005	24	30	32.9	6.1	0.71	016328
14.0	+.9098594	9146	+.3891849	0722	+.1688568	8201	24	59	53.2	26.3	—0.74	016920
14.5	.9063301	3864	.3963457	2331	.1719637	9273	25	28	72.9	46.0	0.76	017510
15.0	.9027347	7922	.4034772	3647	.1750578	0217	25	58	32.1	5.1	0.78	018099
15.5	.8990737	1323	.4105789	4665	.1781391	1033	26	27	50.8	23.8	0.78	018687
16.0	.8953474	4072	.4176504	5382	.1812072	1717	26	56	68.9	41.8	0.78	019274
16.5	+.8915561	6170	+.4246912	5791	+.1842621	2269	27	25	86.4	59.3	—0.77	019859
17.0	.8877001	7622	.4317007	5888	.1873034	2685	27	55	43.3	16.1	0.75	020444
17.5	.8837797	8429	.4386786	5668	.1903312	2966	28	24	59.7	32.5	0.73	021029
18.0	.8797952	8595	.4456243	5127	.1933449	3107	28	53	75.7	48.4	0.70	021613
18.5	.8757469	8123	.4525374	4260	.1963447	3108	29	23	31.2	3.9	0.66	022197
19.0	+.8716352	7018	+.4594177	3065	+.1993300	2965	29	52	46.1	18.7	—0.62	022780
19.5	.8674604	5281	.4662646	1536	.2023010	2679	30	21	60.5	33.1	0.57	023362
20.0	.8632228	2916	.4730775	:9667	.2052572	2245	30	50	74.5	47.0	0.52	023944
20.5	.8589227	9926	.4798563	7457	.2081986	1663	31	20	28.1	0.6	0.46	024525
21.0	.8545606	6316	.4866004	4901	.2111250	0930	31	49	41.1	13.5	0.40	025106
21.5	+.8501367	2088	+.4933094	1993	+.2140362	0046	32	18	53.5	25.9	—0.34	025686
22.0	.8456513	7245	.4999826	8729	.2169320	9008	32	47	65.5	37.8	0.27	026266
22.5	.8411048	1791	.5066203	5107	.2198122	7813	33	16	77.1	49.4	0.21	026846
23.0	.8364976	5730	.5132212	1119	.2226765	6460	33	46	28.2	0.4	0.14	027425
23.5	.8318299	9064	.5197853	6763	.2255248	4947	34	15	38.9	11.1	0.08	028003
24.0	+.8271021	1797	+.5263120	2033	+.2283569	3272	34	44	49.2	21.3	—0.02	028581
24.5	.8223145	3931	.5328007	6923	.2311726	1433	35	13	59.1	31.2	+0.04	029159
25.0	.8174673	5470	.5392511	1430	.2339716	9427	35	42	68.6	40.6	0.10	029735
25.5	.8125607	6415	.5456630	5552	.2367539	7254	36	11	77.7	49.7	0.15	030309
26.0	.8075952	6771	.5520357	:9282	.2395191	4910	36	40	86.4	58.3	0.19	030881
26.5	+.8025712	6542	+.5583689	2617	+.2422672	2395	37	10	34.7	6.6	+0.23	031452
27.0	.7974889	5730	.5646620	5551	.2449977	9704	37	39	42.6	14.4	0.26	032021
27.5	.7923488	4340	.5709147	8081	.2477107	6838	38	8	50.2	22.0	0.28	032588
28.0	.7871512	2375	.5771264	0201	.2504058	3793	38	37	57.4	29.1	0.30	033153
28.5	.7818964	9838	.5832968	1908	.2530830	0569	39	6	64.2	35.8	0.31	033715
29.0	+.7765848	6733	+.5894251	3194	+.2557419	7162	39	35	70.7	42.2	+0.32	034275
29.5	.7712169	3065	.5955112	4058	.2583826	3573	40	4	76.9	48.4	0.31	034832
30.0	.7657930	8837	.6015543	4493	.2610044	:9796	40	33	82.6	54.0	0.30	035386
30.5	.7603134	4052	.6075541	4495	.2636076	5832	41	2	88.0	59.4	0.28	035937
May 1.0	.7547784	8713	.6135102	4060	.2661916	1677	41	32	33.0	4.3	0.25	036484
1.5	+.7491886	2826	+.6194222	3184	+.2687565	7330	42	1	37.6	8.9	+0.22	037027

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
May 2.0	+.7435444	6305	+.6252898	1864	+.2713020	2790	42° 30′ 41″.8	13″.0	+0″.18	0.0 037567
2.5	.7378462	9424	.6311123	0093	.2738280	8054	42 59 45.7	16.9	0.13	038103
3.0	.7320944	1917	.6368891	7865	.2763342	3121	43 28 49.2	20.3	0.07	038634
3.5	.7262894	3878	.6426201	5179	.2788205	7988	43 57 52.3	23.3	+0.02	039161
4.0	.7204318	5313	.6483047	2030	.2812865	2653	44 26 55.0	25.9	—0.04	039684
4.5	+.7145220	6226	+.6539425	8413	+.2837324	7117	44 55 57.3	28.2	—0.10	040202
5.0	.7185605	6622	.6595329	4322	.2861573	1371	45 24 59.2	30.0	0.17	040716
5.5	.7125477	6504	.6650757	:9755	.2885617	5420	45 53 60.7	31.5	0.23	041225
6.0	.6964841	5879	.6705703	4707	.2909452	9260	46 22 61.8	32.5	0.30	041730
6.5	.6903703	4752	.6760165	:9174	.2933077	2890	46 51 62.5	33.2	0.37	042231
7.0	+.6842066	3126	+.6814137	3152	+.2956490	6308	47 20 62.8	33.4	—0.44	042727
7.5	.6779935	:1006	.6867617	6637	.2979689	9512	47 49 62.7	33.2	0.50	043218
8.0	.6717315	8396	.6920601	:9627	.3002674	2502	48 18 62.2	32.6	0.56	043705
8.5	.6654212	5303	.6973084	2116	.3025442	5275	48 47 61.3	31.6	0.69	044187
9.0	.6590632	1734	.7025063	4101	.3047991	7829	49 16 59.9	30.1	0.67	044664
9.5	+.6526579	7691	+.7076533	5577	+.3070321	0164	49 45 58.1	28.3	—0.72	045137
10.0	.6462058	3181	.7127493	6544	.3092428	2277	50 14 55.8	25.9	0.76	045606
10.5	.6397073	8206	.7177938	6995	.3114313	4167	50 43 53.1	23.2	0.80	046070
11.0	.6331631	2775	.7227865	6928	.3135972	5831	51 12 49.9	19.9	0.83	046530
11.5	.6265739	6893	.7277272	6341	.3157407	7271	51 41 46.3	16.3	0.85	046987
12.0	+.6199400	:0565	+.7326152	5228	+.3178613	8482	52 10 42.2	12.1	—0.87	047439
12.5	.6132619	3794	.7374506	3588	.3199593	9467	52 39 37.7	7.5	0.88	047887
13.0	.6065401	6587	.7422328	1417	.3220342	0221	53 8 32.8	2.5	0.88	048331
13.5	.5997753	8949	.7469618	8713	.3240861	0745	53 36 87.5	57.1	0.87	048772
14.0	.5929679	:0885	.7516370	5472	.3261148	1037	54 5 81.7	51.2	0.85	049209
14.5	+.5861185	2401	+.7562585	1693	+.3281199	1093	54 34 75.5	45.0	—0.82	049643
15.0	.5792276	3503	.7608256	7371	.3301020	0919	55 3 68.9	38.3	0.79	050073
15.5	.5722957	4194	.7653384	2505	.3320603	0507	55 32 61.9	31.3	0.75	050501
16.0	.5653234	4481	.7697964	7092	.3339948	9856	56 1 54.5	23.8	0.71	050926
16.5	.5583111	4368	.7741995	1129	.3359056	8969	56 30 46.6	15.9	0.66	051348
17.0	+.5512593	3861	+.7785474	4615	+.3377923	7841	56 59 38.3	7.5	—0.61	051768
17.5	.5441687	2965	.7828399	7547	.3396550	6473	57 27 89.6	58.7	0.55	052185
18.0	.5270397	1685	.7870765	:9920	.3414935	4863	57 56 80.6	49.6	0.49	052600
18.5	.5298727	:2025	.7912573	1735	.3433078	3011	58 25 71.2	40.1	0.43	053012
19.0	.5226681	7990	.7953819	2988	.3450976	0914	58 54 61.4	30.2	0.36	053421
19.5	+.5154265	5584	+.7994502	3678	+.3468630	8573	59 23 51.4	20.2	—0.30	053828
20.0	.5081485	2814	.8034617	3800	.3486037	5985	59 52 40.9	9.6	0.23	054232
20.5	.5008345	9684	.8074162	3353	.3503197	3150	60 20 90.3	59.0	0.17	054634
21.0	.4934849	6197	.8113135	2334	.3520109	0067	60 49 79.2	47.8	0.10	055033
21.5	.4861005	2363	.8151534	0741	.3536771	6734	61 18 67.9	36.5	—0.04	055430
22.0	+.4786815	8182	+.8189355	8570	+.3553182	3151	61 47 56.2	24.7	+0.01	055824
22.5	.4712284	3661	.8226598	5821	.3569341	9315	62 16 44.2	12.6	0.06	056215
23.0	.4637417	8803	.8263258	2489	.3585248	5228	62 45 32.0	0.3	0.11	056604
23.5	.4562222	3618	.8299335	8574	.3600901	0886	63 13 79.4	47.6	0.15	056991
24.0	.4486701	8106	.8334824	4071	.3616300	6291	63 42 66.6	34.7	0.18	057375
24.5	+.4410861	2275	+.8369725	8980	+.3631443	1439	64 11 53.6	21.7	+0.21	057755
25.0	.4334705	6128	.8404035	3299	.3646330	6332	64 40 40.3	8.3	0.23	058131
25.5	.4258240	9672	.8437752	7025	.3660959	0966	65 8 86.8	54.8	0.24	058504
26.0	.4181470	2911	.8470872	0154	.3675329	5342	65 37 73.1	41.0	0.25	058875
26.5	.4104401	5851	.8503393	2684	.3689438	9456	66 6 59.2	27.0	0.24	059242
27.0	+.4027037	8496	+.8535312	4612	+.3703287	3311	66 35 45.1	12.8	+0.23	059605
27.5	.3949384	0352	.8566628	5937	.3716872	6901	67 3 90.8	58.4	0.21	059963
28.0	.3871446	2923	.8597338	6657	.3730195	0230	67 32 76.2	43.7	0.19	060317
28.5	.3793229	4715	.8627440	6768	.3743253	3293	68 1 61.5	28.9	0.16	060667
29.0	.3714738	6232	.8656930	6268	.3756046	6092	68 30 46.6	13.9	0.13	061012
29.5	+.3635978	7480	+.8685806	5153	+.3768572	8623	68 58 91.5	58.8	+0.09	061353
30.0	.3556956	8466	.8714066	3423	.3780832	0889	69 27 76.2	43.4	+0.04	061689
30.5	.3477678	9197	.8741708	1075	.3792823	2885	69 56 60.8	28.0	—0.01	062018
31.0	.3398151	9678	.8768730	8107	.3804543	4611	70 25 45.1	12.2	0.07	062342
31.5	.3318379	9914	.8795130	4517	.3815993	6067	70 53 89.2	56.2	0.13	062661
June 1.0	+.3238368	9911	+.8820903	0301	+.3827171	7251	71 22 73.1	40.0	—0.20	062975

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							° ′ ″	″	″	0.0
June 1.5	+.3158125	9676	+.8846050	5458	+.3838077	8162	71 51 56.8	23.6	−0.27	063283
2.0	.3077656	9215	.8870567	:9986	.3848710	8801	72 20 40.3	7.0	0.34	063586
2.5	.2996966	8533	.8894454	3883	.3859070	9167	72 48 83.7	50.3	0.41	063882
3.0	.2916062	7636	.8917707	7147	.3869156	9259	73 17 66.8	33.3	0.47	064172
3.5	.2834950	6532	.8940327	:9777	.3878967	9076	73 46 49.7	16.2	0.54	064456
4.0	+.2753635	5225	+.8962311	1772	+.3888501	8616	74 14 92.4	58.8	0.60	064734
4.5	.2672123	3720	.8983658	3130	.3897760	7881	74 43 74.9	41.3	0.66	065006
5.0	.2590422	2026	.9004364	3847	.3906742	6869	75 12 57.2	23.5	0.71	065272
5.5	.2508538	:0150	.9024431	3925	.3915447	5580	75 41 39.2	5.4	0.76	065531
6.0	.2426476	8095	.9043855	8360	.3923871	4010	76 9 81.0	47.1	0.80	065784
6.5	+.2344242	5869	+.9062636	2152	+.3932018	2163	76 38 62.6	28.6	0.84	066031
7.0	.2261844	3478	.9080774	0301	.3939885	:0036	77 7 43.9	9.8	0.87	066273
7.5	.2179287	:0929	.9098266	7804	.3947472	7629	77 35 85.0	50.8	0.90	066509
8.0	.2096578	8227	.9115112	4662	.3954778	4941	78 4 65.9	31.6	0.93	066739
8.5	.2013724	5380	.9131312	0873	.3961805	1974	78 33 46.6	12.3	0.93	066962
9.0	+.1930730	2393	+.9146861	6434	+.3968550	8726	79 1 87.0	52.6	0.92	067180
9.5	.1847603	9273	.9161762	1347	.3975015	5197	79 30 67.2	32.8	0.91	067393
10.0	.1764349	6026	.9176013	5610	.3981198	1386	79 59 47.1	12.6	0.90	067600
10.5	.1680974	2658	.9189615	9224	.3987100	7294	80 27 86.8	52.2	0.88	067802
11.0	.1597484	9174	.9202565	2186	.3992720	2920	80 56 66.2	31.5	0.85	067999
11.5	+.1513885	5582	+.9214865	4498	+.3998058	8264	81 25 45.4	10.6	0.81	068190
12.0	.1430184	1887	.9226513	6158	.4003115	3327	81 53 84.4	49.5	0.77	068376
12.5	.1346386	8095	.9237511	7168	.4007890	8108	82 22 63.1	28.1	0.72	068557
13.0	.1262497	4212	.9247857	7527	.4012381	2606	82 51 41.6	6.5	0.67	068734
13.5	.1178522	:0243	.9257552	7234	.4016590	6821	83 19 79.9	44.8	0.61	068906
14.0	+.1094468	6195	+.9266594	6289	+.4020516	0753	83 48 58.0	22.8	0.55	069074
14.5	.1010340	2073	.9274985	4692	.4024160	4403	84 17 35.9	0.6	0.49	069239
15.0	.0926145	7884	.9282723	2443	.4027520	7769	84 45 73.6	38.2	0.42	069400
15.5	.0841888	3633	.9289809	9542	.4030599	0854	85 14 51.1	15.6	0.36	069557
16.0	.0757575	9325	.9296243	5989	.4033394	3655	85 42 88.4	52.8	0.29	069709
16.5	+.0673211	4967	+.9302024	1781	+.4035905	6172	86 11 65.6	29.9	0.23	069857
17.0	.0588801	:0562	.9307153	6925	.4038133	8407	86 40 42.6	6.8	0.16	070003
17.5	.0504352	6118	.9311629	1414	.4040078	0358	87 8 79.5	43.6	0.10	070145
18.0	.0419869	:1640	.9315453	5251	.4041740	2026	87 37 56.2	20.2	−0.03	070283
18.5	.0335357	7133	.9318625	8436	.4043119	3411	88 5 92.8	56.8	+0.02	070418
19.0	+.0250821	2601	+.9321143	0968	+.4044215	4513	88 34 69.3	33.2	0.07	070549
19.5	.0166266	8051	.9323008	2846	.4045027	5331	89 3 45.7	9.6	0.11	070677
20.0	+.0081699	3488	.9324220	4072	.4045555	5865	89 31 82.0	45.8	0.15	070801
20.5	−.0002874	1080	.9324779	4644	.4045799	6115	90 0 58.3	22.0	0.18	070922
21.0	.0087448	5650	.9324684	4563	.4045759	6082	90 28 94.5	58.1	0.21	071039
21.5	−.0172019	0217	+.9323936	3828	+.4045435	5764	90 57 70.7	34.2	0.23	071153
22.0	.0256580	4774	.9322535	2441	.4044826	5161	91 26 46.8	10.2	0.24	071262
22.5	.0341125	:9315	.9320480	0400	.4043935	4276	91 54 82.9	46.2	0.23	071367
23.0	.0425648	3834	.9317772	7706	.4042758	3106	92 23 58.9	22.1	0.22	071468
23.5	.0510145	:8327	.9314410	4358	.4041298	1652	92 51 94.9	58.0	0.20	071565
24.0	−.0594609	2788	+.9310395	0357	+.4039554	9914	93 20 70.9	33.9	0.18	071658
24.5	.0679035	7210	.9305726	5702	.4037526	7892	93 49 46.9	9.8	0.16	071747
25.0	.0763417	1589	.9300403	0393	.4035215	5588	94 17 82.9	45.7	0.13	071832
25.5	.0847749	5918	.9294426	4430	.4032620	2999	94 46 59.0	21.7	0.09	071912
26.0	.0932025	0191	.9287796	7814	.4029741	:0126	95 14 95.0	57.6	+0.05	071986
26.5	−.1016240	4403	+.9280512	0544	+.4026578	6969	95 43 71.0	33.6	0.00	072056
27.0	.1100387	:8548	.9272574	2621	.4023131	3528	96 12 47.1	9.6	−0.05	072121
27.5	.1184460	2618	.9263983	4044	.4019401	9804	96 40 83.2	45.6	0.11	072181
28.0	.1268452	6608	.9254738	4814	.4015387	5796	97 9 59.3	21.6	0.17	072235
28.5	.1352359	0513	.9244840	4930	.4011089	1504	97 37 95.5	57.7	0.23	072283
29.0	−.1436174	4326	+.9234289	4394	+.4006508	6929	98 6 71.7	33.8	0.30	072325
29.5	.1519891	8041	.9223085	3204	.4001644	2071	98 35 48.0	10.0	0.37	072361
30.0	.1603503	1652	.9211229	1362	.3996496	6929	99 3 84.3	46.2	0.44	072391
30.5	.1687004	5151	.9198720	8869	.3991065	1504	99 32 60.6	22.4	0.50	072415
July 1.0	.1770389	:8535	.9185562	5726	.3985353	5798	100 0 96.9	58.6	0.56	072432
1.5	−.1853653	1798	+.9171754	1933	+.3979359	9810	100 29 73.3	35.0	−0.62	072443

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.			λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							°	′	″	″	″	0.0
July 2.0	—.1936787	4931	+.9157298	7492	+.3973083	3540	100	58	49.7	11.3	—0.68	072448
2.5	.2019784	7927	.9142194	2403	.3966526	6989	101	26	86.1	47.7	0.73	072447
3.0	.2102638	0780	9126443	6668	.3959689	:0159	101	55	62.6	24.1	0.77	072438
3.5	.2185346	3488	.9110047	0287	.3952572	3048	102	24	39.1	0.6	0.81	072422
4.0	.2267899	6041	.9093004	3260	.3945175	5657	102	52	75.6	37.0	0.85	072401
4.5	—.2350291	:8433	+.9075318	5589	+.3937500	7988	103	21	52.2	13.6	—0.87	072373
5.0	.2432517	0659	.9056989	7276	.3929547	:0041	103	49	88.7	50.0	0.89	072339
5.5	.2514570	2712	.9038018	8320	.3921316	1816	104	18	65.3	26.5	0.90	072298
6.0	.2596442	4584	.9018408	8726	.3912808	3314	104	47	41.8	2.9	0.91	072251
6.5	.2678128	6270	.8998161	8494	.3904023	4535	105	15	78.3	39.3	0.90	072197
7.0	—.2759622	7764	+.8977277	7626	+.3894963	5481	105	44	54.8	15.7	—0.89	072136
7.5	.2840918	:9060	.8955759	6124	.3885629	6153	106	12	91.4	52.2	0.87	072068
8.0	.2922010	0153	.8933608	3989	.3876021	6550	106	41	67.9	28.6	0.84	071995
8.5	.3002893	1037	.8910827	1224	.3866139	6674	107	10	44.4	5.0	0.81	071916
9.0	.3083562	1707	.8887417	7830	.3855985	6525	107	38	80.9	41.4	0.77	071830
9.5	—.3164010	2156	+.8863381	3810	+.3845559	6105	108	7	57.5	17.9	—0.72	071738
10.0	.3244231	2378	.8838720	9165	.3834863	5414	108	35	94.0	54.3	0.67	071641
10.5	.3324220	2368	.8813437	3898	.3823897	4454	109	4	70.5	30.7	0.61	071539
11.0	.3403971	2121	.8787535	8012	.3812661	3223	109	33	47.0	7.1	0.54	071431
11.5	.3483478	1629	.8761015	1508	.3801157	1725	110	1	83.6	43.7	0.48	071318
12.0	—.3562736	0889	+.8733880	4389	+.3789387	9960	110	30	60.1	20.1	—0.41	071200
12.5	.3641739	:9894	.8706131	6656	.3777351	7930	110	58	96.7	56.7	0.35	071077
13.0	.3720482	:8639	.8677773	8314	.3765051	5635	111	27	73.2	33.1	0.28	070950
13.5	.3798960	7119	.8648805	9361	.3752485	3075	111	56	49.8	9.6	0.22	070819
14.0	.3877169	5331	.8619232	9804	.3739658	:0253	112	24	86.4	46.1	0.16	070683
14.5	—.3955102	3266	+.8589054	9641	+.3726566	7167	112	53	63.1	22.7	—0.12	070543
15.0	.4032755	0922	.8558275	8878	.3713215	3822	113	21	99.8	59.3	—0.04	070399
15.5	.4110122	:8292	.8526896	7514	.3699604	:0217	113	50	76.5	35.9	+0.02	070251
16.0	.4187199	5373	.8494920	5554	.3685734	6352	114	19	53.3	12.6	0.08	070100
16.5	.4263982	2160	.8462350	2999	.3671605	2229	114	47	90.3	49.6	0.13	069946
17.0	—.4340465	:8648	+.8429186	9851	+.3657219	7848	115	16	67.3	26.5	+0.17	069788
17.5	.4416642	4829	.8395433	6113	.3642576	3211	115	45	44.5	3.7	0.21	069626
18.0	.4492508	0699	.8361090	1786	.3627678	8318	116	13	81.8	40.9	0.24	069461
18.5	.4568059	6255	.8326162	6873	.3612525	3170	116	42	59.2	18.2	0.26	069292
19.0	.4643290	1491	.8290650	1377	.3597119	7769	117	10	96.7	55.6	0.28	069120
19.5	—.4718196	6401	+.8254557	5299	+.3581460	2115	117	39	74.3	33.1	+0.28	068944
20.0	.4792772	0982	.8217885	8643	.3565549	6209	118	8	52.1	10.8	0.28	068765
20.5	.4867012	5227	.8180635	1408	.3549387	:0052	118	36	90.1	48.8	0.27	068582
21.0	.4940912	:9132	.8142812	3601	.3532976	3646	119	5	68.3	26.9	0.26	068396
21.5	.5014467	2692	.8104415	5219	.3516315	6990	119	34	46.7	5.3	0.24	068206
22.0	—.5087671	5902	+.8065449	6269	+.3499407	:0087	120	2	85.3	43.8	+0.21	068012
22.5	.5160520	:8757	.8025915	6750	.3482252	2937	120	30	64.1	22.6	0.18	067815
23.0	.5233008	1251	.7985815	6666	.3464851	5541	121	0	43.0	1.4	0.14	067614
23.5	.5305131	3380	.7945151	6017	.3447205	7900	121	28	82.2	40.6	0.09	067409
24.0	.5376883	5139	.7903927	4809	.3429316	:0016	121	57	61.7	19.9	+0.04	067200
24.5	—.5448259	6521	+.7862143	3040	+.3411184	1889	122	25	101.4	59.5	—0.02	066987
25.0	.5519253	7522	.7819803	:0716	.3392811	3521	122	54	81.3	39.3	0.08	066769
25.5	.5589861	8137	.7776908	7836	.3374197	4912	123	23	61.5	19.5	0.14	066546
26.0	.5660078	:8361	.7733461	4405	.3355344	6063	123	51	102.0	59.9	0.20	066319
26.5	.5729898	8188	.7689466	:0425	.3336253	6977	124	20	82.7	40.6	0.26	066088
27.0	—.5799316	7614	+.7644923	5898	+.3316926	7654	124	49	63.6	21.4	—0.32	065851
27.5	.5868327	6632	.7599838	:0828	.3297363	8096	125	18	44.8	2.6	0.38	065609
28.0	.5936926	5239	.7554212	5218	.3277564	8302	125	46	86.4	44.1	0.44	065362
28.5	.6005108	3429	.7508050	9071	.3257533	8276	126	15	68.3	25.9	0.50	065109
29.0	.6072868	1197	.7461352	2389	.3237269	8016	126	44	50.4	7.9	0.56	064851
29.5	—.6140199	:8536	+.7414124	5176	+.3216774	7526	127	12	92.7	50.1	—0.61	064587
30.0	.6207096	5441	.7366367	7435	.3196052	6808	127	41	75.3	32.6	0.66	064318
30.5	.6273554	1907	.7318085	9168	.3175101	5862	128	10	58.2	15.5	0.70	064043
31.0	.6339568	7928	.7269282	:0381	.3153924	4689	128	38	101.4	58.6	0.74	063761
31.5	.6405131	3500	.7219960	;1074	.3132523	3293	129	7	84.8	42.0	0.77	063473
Aug. 1.0	—.6470238	8616	+.7170123	1253	+.3110899	1673	129	36	68.4	25.5	—0.79	063180

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.			λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							°	′	″	″	″	0.0
Aug. 1.5	—.6534885	3272	+.7119774	:0919	+.3099053	9832	130	5	52.3	9.4	—0.80	062881
2.0	.6599066	7462	.7068917	:0077	.3066988	7771	130	33	96.4	53.4	0.81	062576
2.5	.6662777	1182	7017556	8731	.3044704	5492	131	2	80.8	37.7	0.80	062265
3.0	.6726012	4426	.6965695	6885	.3022204	2996	131	31	65.4	22.2	0.79	061947
3.5	.6788768	7191	.6913339	4544	.2999489	:0285	132	0	50.3	7.1	0.77	061623
4.0	—.6851037	:9470	+.6860490	1710	+.2976561	7361	132	28	95.4	52.1	0.75	061294
4.5	.6912816	1259	.6807154	8389	.2953421	4225	132	57	80.7	37.3	0.71	060959
5.0	.6974102	2555	.6753332	4581	.2930072	0880	133	26	66.3	22.9	0.67	060618
5.5	.7034890	3353	.6699030	:0294	.2906514	7326	133	55	52.1	8.7	0.63	060272
6.0	7095174	3647	.6644252	5530	.2882751	3567	134	23	98.1	54.6	0.58	059920
6.5	—.7154950	3433	+.6589002	:0294	+.2858784	9604	134	52	84.4	40.9	0.52	059563
7.0	.7214215	2709	.6533285	4591	.2834613	5437	135	21	70.9	27.3	0.46	059200
7.5	.7272964	1468	.6477104	8424	.2810242	1070	135	50	57.6	13.9	0.40	058832
8.0	.7331192	:9707	.6420465	1799	.2785671	6502	136	19	44.5	0.7	0.33	058459
8.5	.7388895	7421	.6363372	4720	.2760903	1740	136	47	91.6	47.8	0.27	058081
9.0	—.7446071	4608	+.6305829	7191	+.2735939	6777	137	16	79.0	35.1	0.20	057699
9.5	.7502715	1263	.6247840	9216	.2710782	1624	137	45	66.6	22.7	0.14	057313
10.0	.7558822	7382	.6189409	:0798	.2685433	6278	138	14	54.4	10.4	—0.07	056923
10.5	.7614388	2959	.6130542	1945	.2659896	:0745	138	42	102.5	58.5	0.00	056529
11.0	.7669410	7993	.6071241	2657	.2634171	5023	139	11	90.8	46.7	+0.07	056131
11.5	—.7723885	2480	+.6011511	2941	+.2608258	9114	139	40	79.3	35.2	0.13	055729
12.0	.7777810	6417	.5951358	2800	.2582161	3020	140	9	68.0	23.8	0.19	055324
12.5	.7831180	:9799	.5890784	2239	.2555883	6746	140	38	57.0	12.7	0.24	054916
13.0	.7883992	2624	.5829794	:1262	.2529423	:0289	141	7	46.3	1.9	0.29	054504
13.5	.7936243	4887	.5768392	9873	.2502785	3655	141	35	95.8	51.4	0.33	054089
14.0	—.7987929	6586	+.5706584	8077	+.2475970	6843	142	4	85.6	41.1	0.36	053672
14.5	.8039048	7718	.5644373	5879	.2448980	9856	142	33	75.7	31.2	0.39	053253
15.0	.8089595	8278	.5581763	3282	.2421816	2695	143	2	66.1	21.5	0.41	052831
15.5	.8139567	8263	.5518759	:0291	.2394480	5362	143	31	56.8	12.2	0.41	052406
16.0	.8188960	7669	.5455364	6908	.2366975	7860	144	0	47.8	3.1	0.42	051978
16.5	—.8237771	6493	+.5391583	3140	+.2339301	:0189	144	28	99.1	54.4	0.41	051547
17.0	.8285997	4733	.5327418	8987	.2311461	2352	144	57	90.8	46.0	0.40	051114
17.5	.8333634	2384	.5262875	4457	.2283457	4351	145	26	82.8	38.0	0.38	050680
18.0	.8380679	:9443	.5197958	9552	.2255291	6187	145	55	75.2	30.3	0.35	050244
18.5	.8427129	5907	.5132671	4277	.2226963	7862	146	24	68.0	23.1	0.32	049805
19.0	—.8472981	1773	+.5067018	8636	+.2198476	9377	146	53	61.1	16.1	0.28	049364
19.5	.8518231	7037	.5001004	2634	.2169832	:0736	147	22	54.6	9.6	0.24	048920
20.0	.8562877	1698	.4934633	6275	.2141033	1939	147	51	48.5	3.4	0.19	048474
20.5	.8606914	5750	.4867909	9563	.2112080	2989	148	19	102.8	57.7	0.13	048026
21.0	.8650339	:9189	.4800836	2502	.2082976	3887	148	48	97.5	52.3	0.07	047576
21.5	—.8693149	2014	+.4733419	5097	+.2053723	4636	149	17	92.7	47.5	+0.01	047123
22.0	.8735340	4220	.4665660	7350	.2024322	5237	149	46	88.3	43.0	—0.05	046668
22.5	.8776909	5804	.4597566	9268	.1994773	5690	150	15	84.4	39.1	0.12	046210
23.0	.8817852	6762	.4529140	:0853	.1965080	5999	150	44	80.9	35.5	0.18	045749
23.5	.8858166	7091	.4460386	2111	.1935246	6167	151	13	77.8	32.4	0.24	045285
24.0	—.8897848	6789	+.4391310	3046	+.1905271	6194	151	42	75.2	29.7	0.30	044817
24.5	.8936894	5850	.4321915	3663	.1875158	6083	152	11	73.0	27.5	0.36	044346
25.0	.8975300	4272	.4252205	3964	.1844910	5837	152	40	71.3	25.7	0.42	043871
25.5	.9013063	2051	.4182187	3957	.1814528	5457	153	9	70.1	24.5	0.47	043393
26.0	.9050179	:9183	.4111864	3645	.1784014	4945	153	38	69.3	23.6	0.52	042912
26.5	—.9086645	5665	+.4041243	3035	+.1753371	4304	154	7	69.0	23.3	0.56	042427
27.0	.9122458	1494	.3970327	2129	.1722601	3536	154	36	69.1	23.3	0.60	041938
27.5	.9157614	6662	.3899124	:0937	.1691705	2642	155	5	69.7	23.9	0.63	041445
28.0	.9192111	1180	.3827635	9458	.1660688	1626	155	34	70.8	24.9	0.66	040948
28.5	.9225947	5032	.3755869	7702	.1629549	:0489	156	3	72.4	26.5	0.67	040447
29.0	—.9259117	8219	+.3683830	5673	+.1598293	9234	156	32	74.4	28.4	0.68	039942
29.5	.9291619	0738	.3611522	3375	.1566920	7862	157	1	76.8	30.8	0.68	039432
30.0	.9323448	2584	.3538951	:0813	.1535434	6377	157	30	79.6	33.5	0.67	038918
30.5	.9354602	3755	.3466122	7994	.1503836	4780	157	59	82.9	36.8	0.65	038399
31.0	.9385080	4250	.3393041	4922	.1472130	3075	158	28	86.7	40.5	0.63	037876
31.5	—.9414877	4064	+.3319713	:1604	+.1440316	1262	158	57	90.9	44.7	—0.60	037349

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ⊙'s True Longitude.	λ′	δ = ⊙'s Latitude.	Log. Rad. Vect. = ρ.
Sept. 1.0	—.9443990	3194	+.3246143	8043	+.1408399	9346	159° 26′ 95″.5	49″.2	—0″.57	0.0 036817
1.5	.9472419	1640	.3172338	4247	.1376380	7328	159 55 100.5	54.2	0.53	036281
2.0	.9500160	:9399	.3098304	:0222	.1344260	5209	160 24 106.0	59.6	0.48	035741
2.5	.9527213	6469	.3024046	5973	.1312044	2994	160 54 51.9	5.5	0.43	035196
3.0	.9553572	2846	.2949570	:1505	.1279733	:0684	161 23 58.2	11.7	0.37	034648
3.5	—.9579237	8529	+.2874882	6826	+.1247330	8282	161 52 64.9	18.4	—0.31	034095
4.0	.9604207	3517	.2799986	:1938	.1214838	5791	162 21 72.0	25.4	0.25	033539
4.5	.9628478	7806	.2724890	6850	.1182259	3213	162 50 79.5	32.9	0.18	032979
5.0	.9652049	1395	.2649598	:1566	.1149594	:0548	163 19 87.4	40.7	0.11	032415
5.5	.9674918	4282	.2574118	6094	.1116848	7803	163 48 95.6	48.9	—0.04	031848
6.0	—.9697085	6467	+.2498452	0435	+.1084022	4977	164 17 104.2	57.4	+0.03	031277
6.5	.9718547	7947	.2422609	4600	.1051118	2074	164 47 53.3	6.5	0.10	031703
7.0	.9739303	8722	.2346594	8592	.1018141	9097	165 16 62.7	15.8	0.16	030127
7.5	.9759352	8789	.2270412	2418	.0985090	6047	165 45 72.5	25.6	0.22	029549
8.0	.9778690	8146	.2194069	6082	.0951970	2927	166 14 82.7	35.7	0.28	028968
8.5	—.9797318	6792	+.2117572	9592	+.0918781	9738	166 43 93.3	46.3	+0.33	028384
9.0	.9815236	4729	.2040923	2950	.0885529	6486	167 12 104.3	57.2	0.38	027798
9.5	.9832441	1952	.1964131	6165	.0852213	3170	167 42 55.6	8.5	0.42	027210
10.0	.9848934	8464	.1887199	9239	.0818837	9794	168 11 67.3	20.1	0.46	026621
10.5	.9864713	4261	.1810134	2180	.0785402	6359	168 40 79.4	32.2	0.49	026031
11.0	—.9879775	9342	+.1732942	4994	+.0751912	2868	169 9 92.0	44.8	+0.51	025439
11.5	.9894122	3708	.1655627	7685	.0718368	9324	169 38 105.0	57.8	0.52	024846
12.0	.9907751	7356	.1578195	:0259	.0684772	5727	170 8 58.4	11.1	0.53	024252
12.5	.9920662	0285	.1500651	2721	.0651127	2082	170 37 72.2	24.9	0.53	023657
13.0	.9932854	2496	.1422999	5074	.0617435	8389	171 6 86.4	39.0	0.52	023062
13.5	—.9944325	3986	+.1345247	7327	+.0583699	4653	171 36 101.1	53.7	+0.50	022466
14.0	.9955075	4756	.1267398	9483	.0549921	:0874	172 5 56.3	8.8	0.48	021870
14.5	.9965104	4804	.1189459	:1549	.0516104	7056	172 34 72.0	24.5	0.45	021273
15.0	.9974410	4130	.1111436	3530	.0482249	3200	173 3 88.1	40.5	0.42	020676
15.5	.9982993	2732	.1033333	5432	.0448360	9310	173 32 104.6	57.0	0.37	020078
16.0	—.9990852	0611	+.0955154	7257	+.0414437	5386	174 2 61.6	14.0	+0.32	019480
16.5	.9997986	7764	.0876905	9012	.0380483	1431	174 31 79.1	31.5	0.27	018883
17.0	1.0004393	4191	.0798593	:0704	.0346503	7450	175 0 97.1	49.4	0.21	018286
17.5	1.0010074	:9892	.0720222	2337	.0312496	3442	175 30 55.6	7.9	0.15	017688
18.0	1.0015027	4865	.0641796	3915	.0278466	9411	175 59 74.6	26.8	0.09	017091
18.5	-1.0019252	8110	+.0563323	5446	+.0244414	5358	176 28 94.2	46.4	+0.03	016493
19.0	1.0022747	1625	.0484806	6932	.0210344	1286	176 58 54.3	6.4	—0.04	015896
19.5	1.0025512	5410	.0406252	8382	.0176257	7198	177 27 74.9	27.0	0.11	015298
20.0	1.0027545	7463	.0327665	9798	.0142157	3096	177 56 96.1	48.1	0.17	014700
20.5	1.0028846	8784	.0249052	:1188	.0108044	8982	178 26 57.8	9.8	0.23	014101
21.0	-1.0029416	9374	+.0170417	2556	+.0073923	4859	178 55 80.1	32.1	—0.29	013502
21.5	1.0029253	9231	.0091766	3908	.0039795	:0729	179 24 103.0	54.9	0.35	012902
22.0	1.0028355	8354	+.0013104	5248	+.0005663	6595	179 54 66.4	18.3	0.40	012301
22.5	1.0026722	6741	—.0065563	3416	—.0028471	7541	180 23 90.4	42.2	0.44	011700
23.0	1.0024352	4391	.0144230	2081	.0062604	1676	180 53 55.0	6.8	0.48	011097
23.5	-1.0021246	1305	—.0222890	0738	—.0096733	5807	181 22 80.2	31.9	—0.51	010494
24.0	1.0017404	7484	.0301538	:9384	.0130856	:9932	181 51 105.9	57.6	0.54	009889
24.5	1.0012825	2925	.0380168	:8012	.0164973	4051	182 21 72.2	23.8	0.56	009283
25.0	1.0007509	7629	.0458772	6614	.0199080	8160	182 50 99.1	50.7	0.57	008675
25.5	1.0001453	1593	.0537347	5187	.0233173	2255	183 20 66.6	18.2	0.57	008066
26.0	—.9994659	4819	—.0615884	3723	—.0267248	6333	183 49 94.6	46.2	—0.56	007456
26.5	.9987128	7308	.0694379	2216	.0301305	0392	184 19 63.2	14.8	0.56	006844
27.0	.9978859	9059	.0772826	0662	.0335340	4430	184 48 92.3	43.8	0.55	006230
27.5	.9969852	:0072	.0851219	:9054	.0369352	8444	185 18 62.0	13.5	0.53	005615
28.0	.9960105	0345	.0929549	7383	.0403336	2431	185 47 92.2	43.6	0.49	004998
28.5	—.9949619	9879	—.1007814	5647	—.0437290	6388	186 17 63.0	14.4	—0.45	004379
29.0	.9938396	8676	.1086006	3838	.0471213	0314	186 46 94.3	45.6	0.40	003757
29.5	.9926435	6735	.1164117	1048	.0505102	4206	187 16 66.1	17.4	0.34	003133
30.0	.9913736	4056	.1242141	:9072	.0538951	8058	187 45 98.5	49.7	0.28	002567
30.5	.9900300	0640	.1320074	:7905	.0572762	1872	188 15 71.4	22.6	0.22	001879
Oct. 1.0	—.9886128	6488	—.1397909	5740	—.0606529	5642	188 44 104.8	56.0	—0.16	001249

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.			λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							°	′	″	″	″	0.0
Oct. 1.5	—.9671222	1602	—.1475639	3470	—.0640251	:9367	189	14	78.7	29.9	—0.09	000617
2.0	.9855583	5983	.1553259	1090	.0673925	3044	189	44	53.1	4.2	—0.02	▣99984
2.5	.9839212	9632	1630763	:8594	.0707549	6671	190	13	88.0	39.1	+0.04	999350
3.0	.9822109	2550	.1708143	5974	.0741118	0244	190	43	63.3	14.3	0.11	998714
3.5	.9804277	4738	.1785394	3226	.0774632	3760	191	12	99.2	50.2	0.18	998076
4.0	—.9785716	6197	—.1862509	0342	—.0808087	7220	191	42	75.5	26.4	+0.25	997438
4.5	.9766428	6929	.1939484	7318	.0841482	0619	192	12	52.2	3.1	0.31	996800
5.0	.9746415	6937	.2016312	4148	.0874812	3953	192	41	89.4	40.2	0.36	996160
5.5	.9725677	6219	.2092988	0825	.0908076	7220	193	11	67.1	17.9	0.41	995521
6.0	.9704216	4779	.2169503	7342	.0941272	0420	193	40	105.2	55.9	0.46	994880
6.5	—.9682034	2617	—.2245856	3697	—.0974396	3548	194	10	83.8	34.5	+0.50	994238
7.0	.9659133	9737	.2322034	:9877	.1007447	6603	194	40	62.8	13.4	0.54	993596
7.5	.9635515	6139	.2398038	5883	.1040422	:9582	195	9	102.2	52.8	0.57	992955
8.0	.9611181	1826	.2473859	1707	.1073317	2481	195	39	82.1	32.6	0.59	992314
8.5	.9586133	6798	.2549493	7344	.1106132	5300	196	9	62.5	13.0	0.60	991673
9.0	—.9560373	1059	—.2624934	2788	—.1138863	8036	196	38	103.3	53.7	+0.60	991034
9.5	.9533904	4610	.2700174	:8031	.1171509	0686	197	8	84.5	34.9	0.59	990396
10.0	.9506728	7455	.2775211	3073	.1204066	3248	197	38	66.1	16.4	0.58	989758
10.5	.9478846	9593	.2850039	:7905	.1236533	5719	198	7	108.2	58.5	0.57	989121
11.0	.9450261	1029	.2924652	2520	.1268907	8098	198	37	90.8	41.1	0.55	988486
11.5	—.9420975	1763	—.2999046	6918	—.1301186	0381	199	7	73.9	24.2	+0.52	988752
12.0	.9390991	1800	.3073214	1090	.1333367	2567	199	37	57.4	7.6	0.48	987221
12.5	.9360310	1139	.3147152	5031	.1365449	4653	200	6	101.3	51.5	0.44	986592
13.0	.9328934	9783	.3220854	:8737	.1397428	6637	200	36	85.7	35.8	0.40	985965
13.5	.9296866	7735	.3294316	2203	.1429303	8517	201	6	70.6	20.7	0.35	985340
14.0	—.9264108	4998	—.3367531	5422	—.1461072	0291	201	36	56.0	6.0	+0.30	984718
14.5	.9230662	1572	.3440496	:8391	.1492733	1957	202	5	101.9	51.9	0.24	984098
15.0	.9196529	7459	.3513204	1103	.1524282	3511	202	35	88.3	38.2	0.18	983481
15.5	.9161711	2661	.3585651	3555	.1555718	4952	203	5	75.2	25.1	0.11	982866
16.0	.9126211	7181	.3657831	5740	.1587038	6278	203	35	62.6	12.5	+0.04	982254
16.5	—.9090030	1020	—.3729740	7654	—.1618241	7486	204	6	50.5	0.4	—0.03	981645
17.0	.9053171	4181	.3801371	:9290	.1649323	8574	204	34	99.0	48.8	0.09	981038
17.5	.9015636	6666	.3872721	0646	.1680284	:9540	205	4	88.0	37.8	0.16	980434
18.0	.8977428	8478	.3943783	1714	.1711118	0380	205	34	77.6	27.3	0.22	979832
18.5	.8938548	9618	.4014553	2490	.1741827	1094	206	4	67.7	17.4	0.27	979233
19.0	—.8898999	:0088	—.4085025	2968	—.1772405	1678	206	34	58.3	7.9	—0.32	978636
19.5	.8858783	9892	.4155194	3143	.1802852	2130	207	3	109.5	59.1	0.37	978041
20.0	.8817902	9030	.4225055	3010	.1833166	2450	207	33	101.2	50.7	0.41	977449
20.5	.8776359	7507	.4294603	2564	.1863344	2634	208	3	93.5	43.0	0.45	976859
21.0	.8734155	5322	.4363830	1798	.1893381	2677	208	33	86.4	35.8	0.48	976272
21.5	—.8691294	2481	—.4432733	0707	—.1923279	2581	209	3	79.8	29.2	—0.50	975687
22.0	.8647777	8983	.4501305	:9286	.1953031	2339	209	33	73.8	23.1	0.52	975104
22.5	.8603607	4833	.4569543	7531	.1982636	1950	210	3	68.4	17.7	0.53	974522
23.0	.8558787	:0032	.4637438	5433	.2012094	1414	210	33	63.5	12.7	0.53	973942
23.5	.8513320	4585	.4704988	2990	.2041402	0728	211	3	59.2	8.4	0.52	973363
24.0	—.8467208	8492	—.4772186	0195	—.2070555	:9887	211	33	55.4	4.5	—0.50	972786
24.5	.8420454	1758	.4839027	7043	.2099554	8892	212	3	52.2	1.3	0.48	972210
25.0	.8373062	4385	.4905506	3530	.2128395	7740	212	32	109.6	58.6	0.45	971635
25.5	.8325035	6377	.4971617	:9648	.2157078	6429	213	2	107.5	56.5	0.41	971061
26.0	.8276375	7736	.5037354	5393	.2185597	4954	213	32	106.0	54.8	0.37	970488
26.5	—.8227085	8465	—.5102712	0759	—.2213951	3314	214	2	105.0	53.8	—0.32	969916
27.0	.8177170	8569	.5167684	5739	.2242137	1507	214	32	104.5	53.2	0.27	969346
27.5	.8126634	8052	.5232266	0329	.2270154	:9530	215	2	104.5	53.2	0.22	968776
28.0	.8075479	6916	.5296452	4524	.2297999	7382	215	32	105.1	53.7	0.16	968207
28.5	.8023709	5165	.5360237	:8317	.2325670	5059	216	2	106.2	54.8	—0.09	967638
29.0	—.7971328	2802	—.5423616	1705	—.2353164	2560	216	32	107.8	56.3	—0.03	967071
29.5	.7918340	9833	.5486584	4682	.2380480	:9882	217	2	109.9	58.4	+0.04	966505
30.0	.7864750	6262	.5549133	7240	.2407614	7024	217	33	52.4	0.8	0.11	965940
30.5	.7810561	2092	.5611259	:9675	.2434565	3982	218	3	55.4	3.7	0.18	965376
31.0	.7755777	7326	.5672958	1083	.2461331	0755	218	33	58.8	7.0	0.25	964813
31.5	—.7700403	1971	—.5734224	2358	—.2487909	7340	219	3	62.7	10.9	+0.32	964251

▣ The first figures of this and the following logarithms are 9.9.

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
Nov. 1.0	—.7644443	6029	—.5795050	3194	—.2514296	3735	219° 33′ 67″.0	15″.1	+0″.38	9.9 963690
1.5	.7587901	9505	.5855433	3587	.2540492	:9938	220 3 71.7	19.8	0.44	963131
2.0	.7530782	2404	5915368	3532	.2566492	5946	220 33 76.9	24.9	0.49	962571
2.5	.7473091	4732	.5974851	3025	.2592297	1758	221 3 82.5	30.5	0.54	962013
3.0	.7414832	6491	.6033876	2060	.2617903	7372	221 33 88.5	36.4	0.58	961457
3.5	—.7356009	7686	—.6092440	0634	—.2643310	2787	222 3 94.9	42.8	+0.61	960904
4.0	.7296628	8323	.6150535	:8740	.2668514	7999	222 33 101.7	49.5	0.64	960353
4.5	.7236694	8407	.6208158	6374	.2693515	3008	223 3 108.8	56.5	0.66	959804
5.0	.7176210	7941	.6265304	3531	.2718309	7809	223 34 56.3	3.9	0.67	959257
5.5	.7115183	6932	.6321974	0212	.2742896	2404	224 4 64.2	11.8	0.67	958712
6.0	—.7053616	5383	—.6378162	6412	—.2767272	6788	224 34 72.5	20.0	+0.66	958170
6.5	.6991515	3298	.6433860	2121	.2791437	0961	225 4 81.1	28.6	0.64	957633
7.0	.6928885	:0687	.6489060	7333	.2815388	4920	225 34 90.1	37.5	0.62	957099
7.5	.6865731	7551	.6543764	2048	.2839124	8664	226 4 99.4	46.8	0.60	956568
8.0	.6802058	3895	.6597970	6266	.2862645	2193	226 34 109.1	56.4	0.57	956040
8.5	—.6737870	9725	—.6651673	:9981	—.2885945	5501	227 5 59.2	6.5	+0.53	955516
9.0	.6673171	5043	.6704868	3186	.2909026	8590	227 35 69.6	16.8	0.48	954996
9.5	.6607967	9856	.6757547	5879	.2931885	1457	228 5 80.4	27.5	0.43	954480
10.0	.6542262	4168	.6809711	8055	.2954519	4100	228 35 91.5	38.5	0.38	953968
10.5	.6476062	7985	.6861356	:9713	.2976928	6517	229 5 103.0	50.0	0.32	953461
11.0	—.6409370	:1310	—.6912476	0847	—.2999111	8709	229 36 54.9	1.8	+0.26	952958
11.5	.6342192	4149	.6963070	1454	.3021065	0669	230 6 67.2	14.1	0.20	952459
12.0	.6274533	6506	.7013133	1531	.3042788	2403	230 36 79.9	26.7	0.14	951966
12.5	.6206398	8388	.7062662	1074	.3064280	3903	231 6 92.9	39.7	0.08	951479
13.0	.6137792	9798	.7111651	0077	.3085539	5171	231 36 106.3	53.0	+0.01	950997
13.5	—.6068719	:0741	—.7160101	:8541	—.3106563	6203	232 7 60.1	6.7	—0.06	950519
14.0	.5999183	:1221	.7208005	6459	.3127350	6999	232 37 74.3	20.8	0.12	950046
14.5	.5929190	:1244	.7255361	3829	.3147899	7556	233 7 88.9	35.3	0.18	949579
15.0	.5858745	:0815	.7302164	0646	.3168208	7874	233 37 103.9	50.2	0.23	949118
15.5	.5787853	9939	.7348411	6907	.3188276	7950	234 8 59.3	5.6	0.28	948661
16.0	—.5716519	8621	—.7394098	2609	—.3208100	7783	234 38 75.1	21.3	—0.32	948209
16.5	.5644747	6858	.7439222	7747	.3227681	7372	235 8 91.3	37.5	0.36	947762
17.0	.5572541	4674	.7483779	2319	.3247013	6713	235 38 108.0	54.1	0.40	947321
17.5	.5499907	:2056	.7527766	6321	.3266098	5806	236 9 65.1	11.2	0.42	946885
18.0	.5426850	9014	.7571180	:9750	.3284935	4652	236 39 82.6	28.6	0.44	946454
18.5	—.5353374	5553	—.7614018	2603	—.3303521	3247	237 9 100.6	46.5	—0.45	946028
19.0	.5279485	:1679	.7656274	4874	.3321854	1589	237 40 59.0	4.8	0.46	945606
19.5	.5205188	7397	.7697944	6559	.3339933	9677	238 10 77.8	23.5	0.45	945189
20.0	.5130488	2712	.7739026	7657	.3357756	7510	238 40 97.1	42.7	0.44	944777
20.5	.5055390	7629	.7779518	8164	.3375321	5084	239 11 56.8	2.4	0.42	944369
21.0	—.4979900	:2153	—.7819413	8075	—.3392628	2401	239 41 76.9	22.4	—0.39	943965
21.5	.4904023	6290	.7858706	7386	.3409674	9456	240 11 97.4	42.9	0.36	943565
22.0	.4827766	:0047	.7897399	6093	.3426458	6250	240 42 58.4	3.8	0.32	943169
22.5	.4751133	3428	.7935484	4194	.3442978	2779	241 12 79.8	25.2	0.27	942777
23.0	.4674131	6440	.7972958	1684	.3459234	9045	241 42 101.6	46.9	0.22	942389
23.5	—.4596765	9088	—.8009818	8560	—.3475224	5044	242 13 63.7	8.9	—0.16	942005
24.0	.4519041	:1378	.8046062	4821	.3490945	0775	242 43 86.2	31.3	0.10	941624
24.5	.4440964	3315	.8081685	0461	.3506397	6236	243 13 109.2	54.2	—0.03	941246
25.0	.4362541	4905	.8116684	5477	.3521579	1428	243 44 72.5	17.4	+0.03	940872
25.5	.4283778	6155	.8151057	:9867	.3536488	6346	244 14 96.2	41.1	0.10	940501
26.0	—.4204682	7072	—.8184800	3628	—.3551124	0992	244 45 60.3	5.1	+0.16	940134
26.5	.4125258	7661	.8217910	6755	.3565485	5362	245 15 84.7	29.5	0.23	939770
27.0	.4045513	7929	.8250384	:9247	.3579570	9457	245 45 109.5	54.2	0.29	939410
27.5	.3965453	7882	.8282219	1100	.3593378	3274	246 16 74.6	19.2	0.35	939053
28.0	.3885086	7527	.8313409	2308	.3606908	6814	246 46 99.9	44.4	0.41	938698
28.5	—.3804417	6870	—.8343954	2871	—.3620158	0073	247 17 65.5	9.9	+0.47	938346
29.0	.3723453	5918	.8373851	2787	.3633128	3053	247 47 91.5	35.8	0.52	937997
29.5	.3642200	4679	.8403098	2052	.3645815	5749	248 18 57.8	2.0	0.57	937652
30.0	.3560665	3154	.8431691	0664	.3658219	8163	248 48 84.3	28.4	0.61	937311
30.5	.3478855	:1356	.8459630	8621	.3670339	0292	249 18 111.1	55.2	0.65	936972
Dec. 1.0	—.3396775	9287	—.8486912	5922	—.3682173	2136	249 49 78.1	22.1	+0.68	936636

Date, 1864.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.			λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ.
							°	′	″	″	″	9.9
Dec. 1.5	—.3314433	6957	—.8513535	2563	—.3693722	3694	250	19	105.4	49.4	+0.70	936304
2.0	.3231837	4372	.8539495	8542	.3704983	4965	250	50	72.9	16.8	0.71	935976
2.5	.3148994	:1540	.8564792	3858	.3715957	5948	251	20	100.6	44.4	0.71	935652
3.0	.3065909	8466	.8589422	8508	.3726643	6644	251	51	68.5	12.2	0.71	935332
3.5	.2982588	5156	.8613385	2490	.3737041	7052	252	21	96.6	40.2	0.70	935016
4.0	—.2899040	:1618	—.8636679	5804	—.3747149	7178	252	52	64.9	8.4	+0.69	934704
4.5	.2815272	7861	.8659303	8447	.3756965	6996	253	22	93.4	36.8	0.67	934397
5.0	.2731290	3889	.8681254	0418	.3766489	6530	253	53	62.0	5.3	0.63	934095
5.5	.2647100	9710	.8702532	1715	.3775722	5773	254	23	90.8	34.1	0.59	933798
6.0	.2562709	5329	.8723134	2337	.3784663	4724	254	54	59.8	3.0	0.55	933505
6.5	—.2478124	:0754	—.8743060	2283	—.3793311	3382	255	24	88.9	32.1	+0.50	933217
7.0	.2393351	5991	.8762308	1551	.3801664	1745	255	55	58.1	1.2	0.44	932935
7.5	.2308396	:1046	.8780876	0137	.3809723	9814	256	25	87.5	30.5	0.38	932659
8.0	.2223267	5926	.8798764	8048	.3817487	4588	256	56	57.1	0.0	0.32	932389
8.5	.2137969	:0637	.8815971	5275	.3824956	5067	257	26	86.8	29.6	0.26	932124
9.0	—.2052509	5186	—.8832496	1821	—.3832129	2350	257	56	116.7	59.4	+0.19	931865
9.5	.1966893	9579	.8848338	7679	.3839006	9137	258	27	86.7	29.3	0.13	931612
10.0	.1881128	3822	.8863495	2861	.3845585	5727	258	57	116.9	59.4	+0.06	931366
10.5	.1795220	7922	.8877967	7354	.3851867	2019	259	28	87.2	29.7	0.00	931126
11.0	.1709175	:1885	.8891754	1162	.3857851	8014	259	59	57.7	0.1	—0.07	930892
11.5	—.1623000	5718	—.8904855	4284	—.3863537	3710	260	29	88.4	30.7	—0.13	930665
12.0	.1536701	9427	.8917268	6718	.3868925	9109	261	0	59.2	1.4	0.19	930445
12.5	.1450284	3018	.8928991	8461	.3874014	4208	261	30	90.2	32.3	0.25	930232
13.0	.1363756	6497	.8940024	:9517	.3878803	9008	262	1	61.3	3.3	0.30	930026
13.5	.1277123	9874	.8950367	:9881	.3883293	3508	262	31	92.6	34.5	0.34	929827
14.0	—.1190390	3146	—.8960019	:9555	—.3887482	7707	263	2	64.1	5.9	—0.38	929635
14.5	.1103565	6328	.8968980	8537	.3891371	1606	263	32	95.8	37.5	0.41	929450
15.0	.1016653	9422	.8977248	6827	.3894959	5205	264	3	67.6	9.2	0.44	929271
15.5	.0929661	:2436	.8984823	4424	.3898246	8502	264	33	99.6	41.2	0.45	929099
16.0	.0842596	5377	.8991703	1326	.3901231	1497	265	4	71.8	13.3	0.46	928934
16.5	—.0755463	8250	—.8997887	7532	—.3903914	4190	265	34	104.2	45.7	—0.45	928776
17.0	.0668269	:1062	.9003374	3041	.3906295	6581	266	5	76.7	18.1	0.44	928624
17.5	.0581021	3820	.9008165	7854	.3908373	8669	266	35	109.5	50.8	0.43	928479
18.0	.0493725	6520	.9012259	1971	.3910147	0453	267	6	82.4	23.6	0.41	928340
18.5	.0406388	9197	.9015655	5389	.3911618	1934	267	36	115.6	56.7	0.38	928207
19.0	—.0319015	:1829	—.9018351	8108	—.3912785	3111	268	7	88.9	29.9	—0.34	928080
19.5	.0231613	4432	.9020347	0126	.3913649	3985	268	38	62.4	3.3	0.30	927960
20.0	.0144189	7012	.9021642	1444	.3914208	4555	269	8	96.1	36.9	0.25	927846
20.5	—.0056749	9576	.9022237	2062	.3914463	4820	269	39	70.0	10.8	0.20	927737
21.0	+.0030699	:7868	.9022129	1977	.3914413	4780	270	9	104.1	44.8	0.14	927634
21.5	+.0118150	5315	—.9021319	1190	—.3914059	4436	270	40	78.3	18.9	—0.07	927536
22.0	.0205597	2759	.9019807	9701	.3913399	3787	271	10	112.7	53.2	—0.02	927443
22.5	.0293033	0192	.9017592	7509	.3912435	2833	271	41	87.2	27.6	+0.04	927356
23.0	.0380449	:7605	.9014674	4614	.3911165	1573	272	12	61.9	2.2	0.11	927273
23.5	.0467839	4992	.9011053	1016	.3909590	:0008	272	42	96.7	36.9	0.18	927195
24.0	+.0555195	2345	—.9006728	6715	—.3907709	8138	273	13	71.7	11.8	+0.24	927122
24.5	.0642511	:9658	.9001700	1710	.3905523	5962	273	43	106.8	46.8	0.31	927053
25.0	.0729781	6926	.8995968	6002	.3903033	3482	274	14	82.1	22.0	0.37	926989
25.5	.0816997	4140	.8989532	9589	.3900238	0697	274	44	117.5	57.4	0.43	926929
26.0	.0904151	1292	.8982392	2473	.3897138	7607	275	15	92.9	32.7	0.49	926874
26.5	+.0991235	:8374	—.8974550	4654	—.3893733	4212	275	46	68.5	8.3	+0.54	926823
27.0	.1078241	5379	.8966006	6134	.3890024	0513	276	16	104.1	43.8	0.58	926776
27.5	.1165163	2300	.8956760	6912	.3886010	6509	276	47	79.7	19.3	0.62	926733
28.0	.1251993	:9129	.8946814	6990	.3881693	2202	277	17	115.3	54.8	0.65	926694
28.5	.1338725	5861	.8936168	6368	.3877072	7591	277	48	91.0	30.4	0.67	926659
29.0	+.1425351	2487	—.8924823	5047	—.3872149	2678	278	19	66.6	5.9	+0.69	926629
29.5	.1511864	:9000	.8912779	3027	.3866923	7462	278	49	102.3	41.5	0.70	926603
30.0	.1598257	5393	.8900038	0310	.3861396	1945	279	20	77.9	17.0	0.70	926581
30.5	.1684525	1662	.8886602	6898	.3855567	6126	279	50	113.6	52.6	0.70	926564
31.0	.1770659	:7797	.8872472	2793	.3849437	:0005	280	21	89.2	28.1	0.69	926551
31.5	.1856653	3792	.8857648	7993	.3843006	3584	280	52	64.8	3.6	0.67	926543
32.0	+.1942500	:9641	—.8842131	2501	—.3836276	6863	281	22	100.3	39.0	+0.64	926539

MERCURY.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.		$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
					°	′			
1870	+0.3538	−0.1233	−0.0420	9.5764	340	36.8	−6.42	+ 2.24	+0.76
1875	0.3464	+0.0222	0.0291	9.5420	3	28.6	7.98	− 0.51	0.67
1880	0.2794	0.1634	−0.0112	9.5102	30	10.7	8.01	4.68	+0.32
1885	+0.1534	0.2684	+0.0089	9.4904	60	21.3	−5.04	8.83	−0.29
1890	−0.0093	0.3084	0.0268	9.4910	91	56.9	+0.31	10.10	0.88
1895	0.1703	0.2740	0.0383	9.5118	121	58.0	4.83	7.77	1.09
1900	0.2963	0.1814	0.0418	9.5440	148	26.7	6.73	4.12	0.95
1905	0.3724	+0.0570	0.0381	9.5782	171	6.1	6.68	− 1.02	0.68
1910	0.3983	−0.0758	0.0292	9.6090	190	34.5	5.77	+ 1.10	0.42
1915	0.3804	0.2007	0.0170	9.6339	207	41.5	4.64	2.45	0.21
1920	0.3272	0.3074	+0.0033	9.6522	223	11.0	3.52	3.31	−0.04
1925	0.2473	0.3890	−0.0107	9.6638	237	38.5	2.45	3.86	+0.11
1930	0.1486	0.4415	0.0240	9.6688	251	33.6	1.42	4.23	0.23
1935	−0.0391	0.4618	0.0354	9.6673	265	21.9	+0.38	4.48	0.34
1940	+0.0732	0.4482	0.0443	9.6592	279	28.6	−0.75	4.59	0.45
1945	0.1797	0.3998	0.0498	9.6446	294	20.9	2.04	4.53	0.56
1950	0.2705	0.3172	0.0509	9.6232	310	30.6	3.56	4.17	0.67
1955	0.3342	0.2032	0.0470	9.5954	328	37.1	5.32	3.23	0.75
1960	0.3574	−0.0652	0.0374	9.5626	349	27.7	7.14	+ 1.30	0.75
1965	0.3267	+0.0817	0.0223	9.5283	13	50.5	8.27	− 2.07	0.56
1970	0.2346	0.2121	−0.0031	9.5001	42	5.2	7.22	6.52	+0.09
1975	+0.0897	0.2937	+0.0168	9.4879	73	10.3	−3.00	9.83	−0.56
1980	−0.0771	0.3030	0.0324	9.4974	104	28.6	+2.42	9.49	1.02
1985	0.2270	0.2420	0.0407	9.5241	133	11.5	5.91	6.29	1.06
1990	0.3335	0.1332	0.0410	9.5580	158	4.8	6.88	2.75	0.85
1995	0.3887	+0.0030	0.0349	9.5914	179	20.8	6.36	− 0.05	0.57
2000	0.3958	−0.1282	0.0246	9.6199	197	45.9	5.33	+ 1.72	0.33
2005	0.3626	0.2467	+0.0116	9.6421	214	8.6	4.18	2.85	−0.13
2010	0.2975	0.3438	−0.0024	9.6577	229	9.0	3.08	3.56	+0.03
2015	0.2090	0.4141	0.0162	9.6666	243	20.1	2.03	4.03	0.16
2020	−0.1050	0.4537	0.0289	9.6690	257	9.4	+1.01	4.35	0.28
2025	+0.0066	0.4605	0.0394	9.6648	271	2.1	−0.06	4.54	0.39
2030	0.1176	0.4328	0.0470	9.6541	285	23.8	1.25	4.59	0.50
2035	0.2191	0.3703	0.0508	9.6367	300	43.3	2.62	4.42	0.61
2040	0.3002	0.2744	0.0499	9.6127	317	35.2	4.24	3.88	0.71
2045	0.3493	0.1494	0.0438	9.5826	336	42.3	6.08	2.60	0.76
2050	0.3521	−0.0055	0.0319	9.5485	358	53.9	7.75	+ 0.12	0.70
2055	0.2967	+0.1384	−0.0148	9.5156	24	51.7	8.20	− 3.82	+0.40
2060	0.1808	0.2529	+0.0052	9.4927	54	29.4	5.85	8.18	−0.17
2065	+0.0224	0.3067	0.0239	9.4892	86	2.7	−0.74	10.17	0.79
2070	−0.1420	0.2857	0.0367	9.5067	116	33.8	+4.17	8.39	1.08
2075	0.2763	0.2020	0.0417	9.5375	143	46.4	6.56	4.80	0.99
2080	0.3621	+0.0815	0.0392	9.5720	167	6.9	6.78	− 1.53	0.73
2085	0.3970	−0.0511	0.0311	9.6036	187	7.4	5.97	+ 0.77	0.47
2090	0.3867	0.1784	0.0195	9.6297	204	37.4	4.86	2.24	0.24
2095	0.3395	0.2891	+0.0059	9.6493	220	22.2	3.73	3.17	−0.07
2100	0.2639	0.3758	−0.0081	9.6621	234	59.0	2.65	3.78	+0.08
2105	0.1682	0.4340	0.0216	9.6684	248	58.1	1.62	4.17	0.21
2110	−0.0602	0.4605	0.0335	9.6681	262	45.8	+0.58	4.44	0.32
2115	+0.0522	0.4534	0.0429	9.6613	276	47.1	−0.53	4.58	0.43
2120	0.1605	0.4115	0.0490	9.6478	291	28.5	1.78	4.56	0.54
2125	+0.2552	−0.3352	−0.0511	9.6277	307	20.9	−3.25	+ 4.27	+0.65

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

MERCURY.

Days from Epoch.	*x*.	*y*.	*z*.	Log Radius Vector.	Longitude in Orbit. ° ′	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
2130	+0.3249	−0.2267	−0.0481	9.6011	325 2.1	−4.97	+ 3.47	+0.74
2135	0.3568	−0.0924	0.0397	9.5690	345 18.1	6.82	+ 1.77	0.76
2140	0.3371	+0.0544	0.0255	9.5346	8 58.1	8.17	− 1.32	0.62
2145	0.2565	0.1904	−0.0069	9.5045	36 30.7	7.65	5.68	+0.20
2150	+0.1198	0.2835	+0.0132	9.4886	67 14.0	−3.99	9.44	−0.44
2155	−0.0460	0.3070	0.0300	9.4940	98 43.9	+1.48	9.85	0.96
2160	0.2016	0.2579	0.0397	9.5182	128 4.9	5.47	7.00	1.08
2165	0.3174	0.1560	0.0415	9.5515	153 42.3	6.84	3.36	0.89
2170	0.3822	+0.0280	0.0365	9.5854	175 35.9	6.52	− 0.48	0.62
2175	0.3978	−0.1042	0.0267	9.6150	194 29.3	5.53	+ 1.45	0.37
2180	0.3715	0.2259	0.0141	9.6385	211 11.5	4.39	2.67	0.17
2185	0.3118	0.3275	+0.0002	9.6553	226 24.7	3.28	3.45	−0.00
2190	0.2270	0.4031	−0.0137	9.6654	240 42.8	2.23	3.96	+0.13
2195	0.1253	0.4487	0.0267	9.6690	254 34.2	1.20	4.30	0.26
2200	−0.0146	0.4618	0.0376	9.6661	268 24.4	+0.14	4.51	0.37
2205	+0.0972	0.4406	0.0458	9.6566	282 38.6	−1.01	4.60	0.48
2210	0.2012	0.3846	0.0504	9.6405	297 44.8	2.35	4.48	0.59
2215	0.2872	0.2948	0.0505	9.6177	314 16.4	3.92	4.02	0.69
2220	0.3432	0.1747	0.0454	9.5886	332 54.5	5.73	2.92	0.76
2225	0.3557	−0.0332	0.0346	9.5550	354 27.7	7.49	+ 0.70	0.73
2230	0.3119	+0.1127	−0.0183	9.5213	19 41.4	8.29	− 2.99	+0.49
2235	0.2067	0.2352	+0.0014	9.4957	48 42.3	6.55	7.46	−0.04
2240	+0.0538	+0.3023	+0.0207	9.4881	80 6.6	−1.80	−10.10	−0.69

VENUS.

Days from Epoch.	*x*.	*y*.	*z*.	Log Radius Vector.	Longitude in Orbit. ° ′	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
1870	−0.6499	+0.3044	+0.0418	9.8566	154 50.9	+21.24	− 9.95	−1.37
1875	0.6867	0.2097	0.0425	9.8569	162 57.3	22.40	6.84	1.39
1880	0.7098	0.1107	0.0424	9.8571	171 3.1	23.11	3.61	1.38
1885	0.7189	+0.0096	0.0414	9.8574	179 8.4	23.37	− 0.31	1.34
1890	0.7137	−0.0917	0.0396	9.8577	187 12.9	23.15	+ 2.98	1.28
1895	0.6945	0.1912	0.0370	9.8581	195 16.8	22.49	6.19	1.20
1900	0.6616	0.2870	0.0336	9.8585	203 19.7	21.34	9.26	1.10
1905	0.6157	0.3771	0.0297	9.8589	211 21.8	19.81	12.13	0.96
1910	0.5577	0.4598	0.0251	9.8593	219 23.0	17.90	14.75	0.81
1915	0.4889	0.5336	0.0201	9.8597	227 23.2	15.64	17.07	0.64
1920	0.4105	0.5970	0.0146	9.8601	235 22.7	13.10	19.05	0.47
1925	0.3242	0.6487	0.0089	9.8605	243 21.0	10.32	20.64	0.28
1930	0.2316	0.6879	+0.0030	9.8609	251 18.7	7.35	21.84	−0.10
1935	0.1345	0.7139	−0.0029	9.8612	259 15.6	4.26	22.61	+0.09
1940	−0.0349	0.7260	0.0088	9.8615	267 11.8	+ 1.10	22.94	0.28
1945	+0.0655	0.7243	0.0146	9.8618	275 7.3	− 2.06	22.85	0.46
1950	0.1645	0.7086	0.0200	9.8620	283 2.4	5.18	22.32	0.63
1955	0.2605	0.6793	0.0251	9.8621	290 57.0	8.19	21.38	0.75
1960	0.3514	0.6371	0.0297	9.8622	298 51.4	11.05	20.03	0.93
1965	0.4356	0.5826	0.0337	9.8623	306 45.6	13.69	18.31	1.06
1970	0.5115	0.5170	0.0371	9.8623	314 39.8	16.08	16.25	1.17
1975	0.5776	0.4415	0.0397	9.8622	322 34.0	18.17	13.88	1.25
1980	+0.6327	−0.3576	−0.0416	9.8621	330 28.6	−19.91	+11.26	+1.31

Note.—The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

VENUS.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° ′	$-\frac{\kappa^2}{r^3}x$.	$-\frac{\kappa^2}{r^3}y$.	$-\frac{\kappa^2}{r^3}z$.
1985	+0.6756	−0.2668	−0.0428	9.8619	338 23.2	−21.29	+ 8.41	+1.35
1990	0.7056	0.1705	0.0430	9.8617	346 18.4	22.27	5.38	1.36
1995	0.7220	−0.0717	0.0425	9.8614	354 14.1	22.83	+ 2.27	1.34
2000	0.7245	+0.0288	0.0411	9.8611	2 10.5	22.96	− 0.91	1.30
2005	0.7131	0.1288	0.0390	9.8608	10 7.6	22.65	4.09	1.24
2010	0.6879	0.2264	0.0361	9.8604	18 5.4	21.90	7.21	1.15
2015	0.6494	0.3195	0.0325	9.8600	26 4.1	20.73	10.20	1.04
2020	0.5982	0.4063	0.0283	9.8596	34 3.8	19.16	13.00	0.90
2025	0.5354	0.4854	0.0235	9.8592	42 4.3	17.19	15.59	0.75
2030	0.4622	0.5549	0.0182	9.8588	50 5.7	14.88	17.87	0.59
2035	0.3799	0.6136	0.0126	9.8584	58 7.9	12.27	19.81	0.41
2040	0.2901	0.6601	0.0068	9.8580	66 11.1	9.39	21.37	0.22
2045	0.1946	0.6937	−0.0008	9.8576	74 15.2	6.32	22.52	+0.03
2050	+0.0952	0.7136	+0.0052	9.8573	82 19.9	− 3.10	23.21	−0.17
2055	−0.0059	0.7194	0.0111	9.8570	90 25.4	+ 0.19	23.45	0.36
2060	0.1071	0.7109	0.0168	9.8568	98 31.4	3.50	23.21	0.55
2065	0.2061	0.6883	0.0221	9.8566	106 37.9	6.74	22.50	0.72
2070	0.3009	0.6520	0.0270	9.8565	114 34.8	9.85	21.33	0.88
2075	0.3898	0.6026	0.0314	9.8564	122 51.9	12.76	19.73	1.02
2080	0.4709	0.5414	0.0351	9.8564	130 59.1	15.42	17.73	1.15
2085	0.5427	0.4693	0.0382	9.8564	139 6.3	17.76	15.36	1.25
2090	0.6036	0.3879	0.0404	9.8565	147 13.3	19.74	12.69	1.32
2095	0.6525	0.2988	0.0419	9.8567	155 20.1	21.32	9.76	1.37
2100	0.6885	0.2037	0.0425	9.8569	163 26.5	22.47	6.65	1.39
2105	0.7108	0.1046	0.0423	9.8571	171 32.3	23.12	3.40	1.38
2110	0.7190	+0.0034	0.0413	9.8574	179 37.5	23.37	− 0.11	1.34
2115	0.7129	−0.0978	0.0394	9.8578	187 42.0	23.12	+ 3.17	1.28
2120	0.6929	0.1972	0.0368	9.8581	195 45.8	22.41	6.37	1.19
2125	0.6591	0.2927	0.0334	9.8585	203 48.7	21.27	9.44	1.08
2130	0.6125	0.3824	0.0294	9.8589	211 50.7	19.70	12.30	0.95
2135	0.5538	0.4645	0.0248	9.8593	219 51.8	17.77	14.90	0.80
2140	0.4844	0.5377	0.0198	9.8597	227 51.9	15.50	17.20	0.63
2145	0.4055	0.6004	0.0143	9.8601	235 51.3	12.93	19.16	0.46
2150	0.3187	0.6515	0.0086	9.8605	243 49.7	10.14	20.73	0.27
2155	0.2258	0.6899	+0.0026	9.8609	251 47.3	7.17	21.89	−0.08
2160	0.1285	0.7150	−0.0033	9.8612	259 44.1	4.07	22.64	+0.10
2165	−0.0287	0.7263	0.0092	9.8615	267 40.3	+ 0.91	22.95	0.29
2170	+0.0716	0.7237	0.0149	9.8618	275 35.8	− 2.26	22.82	0.47
2175	0.1705	0.7072	0.0204	9.8620	283 30.8	5.37	22.28	0.64
2180	0.2662	0.6771	0.0254	9.8621	291 25.5	8.38	21.31	0.80
2185	0.3568	0.6341	0.0299	9.8622	299 19.8	11.22	19.94	0.94
2190	0.4405	0.5789	0.0339	9.8623	307 14.0	13.85	18.20	1.07
2195	0.5158	0.5127	0.0373	9.8623	315 8.2	16.21	16.12	1.17
2200	0.5813	0.4366	0.0399	9.8620	323 2.4	18.28	13.73	1.25
2205	0.6356	0.3522	0.0417	9.8621	330 56.9	20.01	11.09	1.31
2210	0.6778	0.2611	0.0428	9.8619	338 51.7	21.36	8.22	1.35
2215	0.7070	0.1649	0.0430	9.8617	346 46.9	22.32	5.21	1.36
2220	0.7226	−0.0656	0.0424	9.8614	354 42.7	22.85	+ 2.07	1.34
2225	0.7243	+0.0350	0.0410	9.8611	2 39.0	22.95	− 1.11	1.30
2230	0.7120	0.1349	0.0388	9.8607	10 36.2	22.62	4.28	1.23
2235	+0.6860	0.2322	−0.0359	9.8604	18 34.1	−21.84	− 7.39	+1.14

NOTE.—The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

THE EARTH

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° ′	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
1870	−0.1457	+0.9724	0.0000	9.9927	98 30.5	+ 2.05	−13.65	0.00
1880	0.3152	0.9316		9.9927	108 41.8	4.42	13.07	
1890	0.4753	0.8616		9.9930	118 53.0	6.66	12.06	
1900	0.6207	0.7651		9.9935	129 2.9	8.66	10.68	
1910	0.7468	0.6449		9.9942	139 11.1	10.37	8.96	
1920	0.8500	0.5049		9.9950	149 17.1	11.74	6.97	
1930	0.9273	0.3496		9.9961	159 20.5	12.71	4.79	
1940	0.9766	0.1837		9.9973	169 20.9	13.28	2.50	
1950	0.9963	+0.0117		9.9985	179 18.1	13.43	− 0.16	
1960	0.9865	−0.1600		9.9997	189 11.9	13.19	+ 2.14	
1970	0.9475	0.3269		0.0010	199 2.2	12.56	4.33	
1980	0.8805	0.4844		0.0022	208 49.2	11.57	6.37	
1990	0.7880	0.6279		0.0033	218 33.0	10.28	8.19	
2000	0.6728	0.7534		0.0044	228 13.9	8.71	9.75	
2010	0.5384	0.8573		0.0053	237 52.2	6.92	11.03	
2020	0.3886	0.9365		0.0060	247 28.2	4.97	11.99	
2030	0.2277	0.9895		0.0066	257 2.5	2.90	12.61	
2040	−0.0604	1.0144		0.0070	266 35.4	+ 0.77	12.89	
2050	+0.1085	1.0109		0.0072	276 7.6	− 1.38	12.83	
2060	0.2745	0.9791		0.0072	285 39.7	3.49	12.43	
2070	0.4326	0.9196		0.0070	295 11.8	5.50	11.69	
2080	0.5786	0.8343		0.0066	304 44.8	7.37	10.64	
2090	0.7084	0.7254		0.0060	314 19.3	9.07	9.29	
2100	0.8180	0.5960		0.0051	323 55.5	10.53	7.67	
2110	0.9043	0.4496		0.0043	333 34.0	11.71	5.82	
2120	0.9647	0.2903		0.0032	343 15.1	12.58	3.78	
2130	0.9973	−0.1227		0.0021	352 59.1	13.11	+ 1.61	
2140	1.0010	+0.0485		0.0009	2 46.4	13.27	− 0.64	
2150	0.9750	0.2182		9.9996	12 37.1	13.05	2.92	
2160	0.9202	0.3815		9.9983	22 31.1	12.42	5.15	
2170	0.8381	0.5335		9.9972	32 28.5	11.40	7.26	
2180	0.7308	0.6693		9.9960	42 29.2	10.02	9.18	
2190	0.6012	0.7847		9.9950	52 32.7	8.30	10.84	
2200	0.4530	0.8763		9.9942	62 38.9	6.29	12.17	
2210	0.2715	0.9410		9.9935	72 47.4	4.07	13.13	
2220	+0.1207	0.9766		9.9930	82 57.5	− 1.69	13.68	
2230	−0.0542	+0.9818	0.0000	9.9927	93 8.6	+ 0.76	−13.78	0.00

MARS.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° ′	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
1870	−0.9556	−1.2076	−0.0027	0.1875	231 39.6	+0.46	+0.58	+0.00
1880	0.8369	1.2787	0.0071	0.1839	236 48.5	0.42	0.63	0.00
1890	0.7105	1.3381	0.0115	0.1802	242 2.7	0.36	0.68	0.01
1900	0.5777	1.3857	0.0157	0.1764	247 22.4	0.30	0.72	0.01
1910	0.4401	1.4216	0.0198	0.1726	252 47.8	0.24	0.76	0.01
1920	0.2987	1.4450	0.0237	0.1688	258 18.9	0.17	0.80	0.01
1930	0.1544	1.4548	0.0274	0.1652	263 55.7	0.09	0.83	0.01
1940	−0.0091	−1.4508	−0.0308	0.1616	269 38.1	+0.01	+0.84	+0.02

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

MARS.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° ′	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
1950	+0.1363	−1.4329	−0.0340	0.1582	275 26.0	−0.08	+0.85	+0.02
1960	0.2804	1.4007	0.0368	0.1549	281 19.4	0.17	0.85	0.02
1970	0.4218	1.3541	0.0392	0.1518	287 18.0	0.26	0.84	0.02
1980	0.5591	1.2944	0.0412	0.1492	293 21.3	0.35	0.82	0.02
1990	0.6906	1.2207	0.0428	0.1468	299 26.8	0.44	0.78	0.02
2000	0.8148	1.1338	0.0439	0.1448	305 40.2	0.53	0.74	0.02
2010	0.9298	1.0344	0.0446	0.1431	311 55.0	0.61	0.68	0.02
2020	1.0343	0.9237	0.0448	0.1418	318 12.6	0.68	0.61	0.02
2030	1.1272	0.8027	0.0444	0.1409	324 31.9	0.75	0.54	0.02
2040	1.2076	0.6727	0.0436	0.1405	330 52.2	0.81	0.46	0.02
2050	1.2747	0.5351	0.0423	0.1405	337 12.8	0.86	0.36	0.02
2060	1.3278	0.3917	0.0405	0.1410	343 33.1	0.89	0.26	0.02
2070	1.3659	0.2439	0.0382	0.1419	349 52.0	0.91	0.16	0.02
2080	1.3885	−0.0933	0.0356	0.1432	356 9.0	0.91	+0.06	0.02
2090	1.3960	+0.0583	0.0325	0.1450	2 23.3	0.91	−0.04	0.02
2100	1.3885	0.2091	0.0291	0.1472	8 34.2	0.89	0.13	0.01
2110	1.3660	0.3579	0.0254	0.1497	14 41.1	0.86	0.22	0.01
2120	1.3292	0.5028	0.0214	0.1524	20 43.7	0.83	0.31	0.01
2130	1.2787	0.6425	0.0172	0.1555	26 41.4	0.78	0.39	0.01
2140	1.2153	0.7757	0.0128	0.1588	32 33.9	0.72	0.46	0.01
2150	1.1400	0.9013	0.0083	0.1622	38 21.0	0.66	0.52	0.00
2160	1.0535	1.0182	−0.0037	0.1658	44 2.6	0.59	0.57	+0.00
2170	0.9572	1.1254	+0.0010	0.1695	49 38.4	0.52	0.62	−0.00
2180	0.8520	1.2224	0.0056	0.1732	55 8.6	0.45	0.65	0.00
2190	0.7392	1.3088	0.0101	0.1770	60 33.2	0.38	0.68	0.01
2200	0.6201	1.3838	0.0146	0.1808	65 52.1	0.31	0.70	0.01
2210	0.4959	1.4471	0.0190	0.1846	71 5.5	0.24	0.72	0.01
2220	0.3675	1.4962	0.0232	0.1881	76 13.7	0.17	0.72	0.01
2230	+0.2352	+1.5367	+0.0272	0.1917	81 16.9	−0.09	−0.72	−0.01

JUPITER.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° ′ ″	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
1870	−4.00766	−3.64742	+0.10359	0.73400	222 17 55	+113.73	+103.51	−2.94
1880	3.95731	3.69940	0.10263	0.73385	223 3 50	112.41	105.08	2.92
1890	3.90622	3.75070	0.10166	0.73371	223 49 46	111.07	106.65	2.89
1900	3.85440	3.80129	0.10067	0.73356	224 35 44	109.71	108.20	2.86
1910	3.80185	3.85117	0.09966	0.73340	225 21 44	108.33	109.74	2.84
1920	3.74859	3.90034	0.09863	0.73324	226 7 45	106.93	111.26	2.81
1930	3.69463	3.94877	0.09758	0.73308	226 53 49	105.51	112.77	2.79
1940	3.63998	3.99646	0.09651	0.73292	227 39 55	104.07	114.26	2.76
1950	3.58465	4.04340	0.09542	0.73275	228 26 3	102.60	115.73	2.73
1960	3.52864	4.08957	0.09432	0.73258	229 12 13	101.12	117.19	2.70
1970	3.47197	4.13498	0.09320	0.73240	229 58 26	99.62	118.64	2.67
1980	3.41465	4.17962	0.09206	0.73223	230 44 40	98.10	120.07	2.64
1990	3.35669	4.22347	0.09091	0.73205	231 30 57	96.55	121.48	2.61
2000	3.29809	4.26652	0.08974	0.73186	232 17 16	94.98	122.87	2.58
2010	3.23887	4.30877	0.08855	0.73167	233 3 38	93.39	124.25	2.55
2020	−3.17904	−4.35020	+0.08734	0.73148	233 50 2	+ 91.79	+125.61	−2.52

Note. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

JUPITER.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° ′ ″	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
2030	−3.11860	−4.39081	+0.08612	0.73129	234 36 29	+90.17	+126.95	−2.49
2040	3.05758	4.43059	0.08488	0.73109	235 22 57	88.53	128.27	2.46
2050	2.99598	4.46952	0.08363	0.73090	236 9 29	86.86	129.58	2.42
2060	2.93380	4.50760	0.08236	0.73069	236 56 3	85.17	130.87	2.39
2070	2.87106	4.54482	0.08107	0.73049	237 42 40	83.47	132.14	2.36
2080	2.80778	4.58118	0.07977	0.73028	238 29 19	81.75	133.39	2.32
2090	2.74397	4.61667	0.07845	0.73007	239 16 1	80.01	134.62	2.29
2100	2.67963	4.65127	0.07712	0.72985	240 2 46	78.25	135.83	2.25
2110	2.61478	4.68498	0.07577	0.72963	240 49 33	76.47	137.02	2.22
2120	2.54942	4.71779	0.07441	0.72941	241 36 24	74.68	138.18	2.18
2130	2.48358	4.74970	0.07303	0.72919	242 23 17	72.86	139.33	2.14
2140	2.41726	4.78069	0.07164	0.72897	243 10 13	71.02	140.46	2.11
2150	2.35047	4.81076	0.07024	0.72874	243 57 12	69.17	141.57	2.07
2160	2.28323	4.83990	0.06882	0.72851	244 44 14	67.30	142.66	2.03
2170	2.21555	4.86810	0.06739	0.72827	245 31 19	65.41	143.72	1.99
2180	2.14744	4.89537	0.06595	0.72803	246 18 27	63.50	144.76	1.95
2190	2.07892	4.92169	0.06449	0.72780	247 5 39	61.58	145.78	1.91
2200	2.01000	4.94706	0.06302	0.72756	247 52 53	59.64	146.77	1.87
2210	1.94068	4.97146	0.06154	0.72731	248 40 10	57.68	147.74	1.83
2220	1.87099	4.99490	0.06005	0.72707	249 27 31	55.70	148.69	1.79
2230	1.80093	5.01736	0.05855	0.72682	250 14 55	53.70	149.62	1.74
2240	−1.73052	−5.03884	+0.05703	0.72657	251 2 22	+51.69	+150.52	−1.70

SATURN.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit. ° ′ ″	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
1870	−9.40841	−1.91683	+0.40950	0.98274	191 31 32	+14.34	+2.92	−0.62
1880	9.40003	1.97157	0.41006	0.98287	191 51 19	14.31	3.00	0.62
1890	9.39134	2.02624	0.41062	0.98300	192 11 5	14.28	3.08	0.62
1900	9.38234	2.08085	0.41116	0.98313	192 30 50	14.25	3.16	0.62
1910	9.37302	2.13539	0.41169	0.98326	192 50 35	14.23	3.24	0.62
1920	9.36339	2.18985	0.41220	0.98340	193 10 19	14.20	3.32	0.63
1930	9.35345	2.24424	0.41270	0.98353	193 30 2	14.17	3.40	0.63
1940	9.34319	2.29856	0.41319	0.98366	193 49 44	14.14	3.48	0.63
1950	9.33262	2.35280	0.41367	0.98379	194 9 26	14.11	3.56	0.63
1960	9.32174	2.40696	0.41413	0.98391	194 29 7	14.08	3.64	0.63
1970	9.31056	2.46104	0.41458	0.98404	194 48 47	14.05	3.72	0.63
1980	9.29907	2.51503	0.41501	0.98417	195 8 27	14.02	3.79	0.63
1990	9.28727	2.56894	0.41543	0.98430	195 28 6	13.99	3.87	0.63
2000	9.27516	2.62277	0.41584	0.98443	195 47 44	13.96	3.95	0.63
2010	9.26275	2.67651	0.41623	0.98456	196 7 21	13.93	4.03	0.63
2020	9.25003	2.73016	0.41661	0.98469	196 26 58	13.90	4.10	0.63
2030	9.23701	2.78372	0.41698	0.98482	196 46 34	13.87	4.18	0.63
2040	9.22368	2.83719	0.41733	0.98494	197 6 10	13.84	4.26	0.63
2050	9.21005	2.89057	0.41767	0.98507	197 25 45	13.81	4.34	0.63
2060	9.19611	2.94385	0.41799	0.98520	197 45 19	13.77	4.41	0.63
2070	9.18187	2.99703	0.41830	0.98533	198 4 52	13.74	4.49	0.63
2080	9.16733	3.05011	0.41860	0.98545	198 24 25	13.71	4.56	0.63
2090	−9.15248	−3.10309	+0.41888	0.98558	198 43 57	+13.67	+4.64	−0.63

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

SATURN.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
2100	−9.13734	−3.15597	+0.41915	0.98570	199° 3′ 28″	+13.63	+4.71	−0.63
2110	9.12190	3.20875	0.41941	0.98583	199 22 58	13.60	4.79	0.63
2120	9.10616	3.26142	0.41965	0.98595	199 42 28	13.56	4.86	0.63
2130	9.09013	3.31399	0.41988	0.98608	200 1 57	13.53	4.94	0.63
2140	9.07380	3.36644	0.42009	0.98620	200 21 25	13.49	5.01	0.62
2150	9.05717	3.41878	0.42029	0.98633	200 40 53	13.46	5.08	0.62
2160	9.04025	3.47101	0.42048	0.98645	201 0 20	13.42	5.15	0.62
2170	9.02303	3.52313	0.42065	0.98658	201 19 46	13.38	5.22	0.62
2180	9.00551	3.57513	0.42081	0.98670	201 39 12	13.35	5.30	0.62
2190	8.98770	3.62701	0.42095	0.98682	201 58 37	13.31	5.37	0.62
2200	8.96960	3.67878	0.42108	0.98694	202 18 2	13.27	5.44	0.62
2210	8.95121	3.73043	0.42120	0.98707	202 37 26	13.23	5.51	0.62
2220	8.93253	3.78195	0.42130	0.98719	202 56 49	13.19	5.59	0.62
2230	8.91355	3.83335	0.42139	0.98731	203 16 11	13.16	5.66	0.62
2240	−8.89428	−3.88463	+0.42147	0.98743	203 35 33	+13.12	+5.73	−0.62

URANUS.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
1880	+2.24190	+18.94477	+0.04550	1.28051	83° 15′ 4″	−0.06	−0.51	0.00
1920	2.08429	18.95500	0.04758	1.28033	83 43 30	0.06	0.51	0.00
1960	1.92658	18.96409	0.04965	1.28016	84 11 58	0.05	0.52	0.00
2000	1.76862	18.97190	0.05173	1.27999	84 40 28	0.05	0.52	0.00
2040	1.61052	18.97837	0.05380	1.27982	85 8 58	0.04	0.52	0.00
2080	1.45239	18.98357	0.05588	1.27964	85 37 30	0.04	0.52	0.00
2120	1.29416	18.98752	0.05795	1.27947	86 6 3	0.03	0.52	0.00
2160	1.13589	18.99011	0.06001	1.27930	86 34 37	0.03	0.52	0.00
2200	0.97757	18.99139	0.06205	1.27913	87 3 12	0.03	0.52	0.00
2240	+0.81917	+18.99135	+0.06409	1.27896	87 31 49	−0.02	−0.52	0.00

NEPTUNE.

Days from Epoch.	x.	y.	z.	Log Radius Vector.	Longitude in Orbit.	$-\frac{k^2}{r^3}x$.	$-\frac{k^2}{r^3}y$.	$-\frac{k^2}{r^3}z$.
1840	+29.7260	+2.6051	−0.7587	1.47494	5° 1′.4	−0.28	−0.02	+0.01
1880	29.7141	2.7306	0.7610	1.47493	5 15.9	0.28	0.03	0.01
1920	29.7017	2.8562	0.7633	1.47492	5 30.5	0.28	0.03	0.01
1960	29.6888	2.9817	0.7655	1.47491	5 45.0	0.28	0.03	0.01
2000	29.6753	3.1072	0.7677	1.47491	5 59.5	0.28	0.03	0.01
2040	29.6613	3.2326	0.7699	1.47490	6 14.1	0.28	0.03	0.01
2080	29.6468	3.3580	0.7721	1.47489	6 28.6	0.28	0.03	0.01
2120	29.6318	3.4833	0.7742	1.47489	6 43.1	0.28	0.03	0.01
2160	29.6163	3.6086	0.7763	1.47488	6 57.7	0.28	0.03	0.01
2200	29.6003	3.7338	0.7785	1.47487	7 12.2	0.28	0.04	0.01
2240	+29.5837	+3.8590	−0.7806	1.47486	7 26.8	−0.28	−0.04	+0.01

Note. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

INCLINATIONS AND NODES.

Planets.	Inclination.	Increase in 100 Days.	Longitude of Ascending Node.	Increase in 100 Days.
	° ′ ″	″	° ′ ″	″
Mercury . . .	7 0 8.8	+0.01952	46 39 20	11.639
Venus	3 23 36.3	+0.01195	75 25 35	9.001
Mars	1 51 2.1	—0.00586	48 27 42	7.579
Jupiter	1 18 39.5	—0.05689	99 1 38	9.993
Saturn	2 29 21.2	—0.03824	112 24 8	8.570
Uranus	0 46 29.8	+0.00834	73 16 44	4.898
Neptune . . .	1 46 29.0		130 12 8	

LOGARITHMS OF MASSES.

Sun's = 1.

Mercury,	93.3129	The Earth,	94.44985	Jupiter,	96.979689	Uranus,	95.60371
Venus,	94.4089	Mars,	93.57176	Saturn,	96.45573	Neptune,	95.72630

ECLIPSES IN 1864.

In the year 1864 there will be two Eclipses; both of the Sun.

I. A Central Eclipse of the Sun, May 5, 1864, invisible at Washington, with the following elements: —

Washington mean time of ☌ in Right Ascension, May $5^{d}\ 7^{h}\ 14^{m}\ 19^{s}.3$.

Sun's and Moon's R. A.	$2^{h}\ 52^{m}\ 55^{s}.99$	Hourly Motions	$9^{s}.66$ and $140^{s}.22$
Sun's Declination	$+16°\ 33'\ 5''.9$	Hourly Motion	$+\ 0'\ 42''.1$
Moon's Declination	+16 48 35.8	" "	+ 6 52.7
Sun's Equa. Hor. Par.	8.5	True Semidiameter	15 50.8
Moon's Equa. Hor. Par.	58 4.7	" "	15 48.8

From these elements may be deduced the following results: —

Eclipse begins on the Earth, May $5^{d}\ 4^{h}\ 22^{m}.4$, Washington mean time, in longitude 156° 3'.1 West from Washington, and in latitude 1° 24'.6 South.

Central Eclipse begins on the Earth $5^{h}\ 23^{m}.3$, in longitude 172° 51'.0 West from Washington, and in latitude 3° 51'.2 North.

Central Eclipse at Noon $7^{h}\ 14^{m}.3$, in longitude 109° 27'.8 West from Washington, and in latitude 32° 14'.3 North.

Central Eclipse ends on the Earth $8^{h}\ 53^{m}.9$, in longitude 36° 18'.7 West from Washington, and in latitude 25° 22'.0 North.

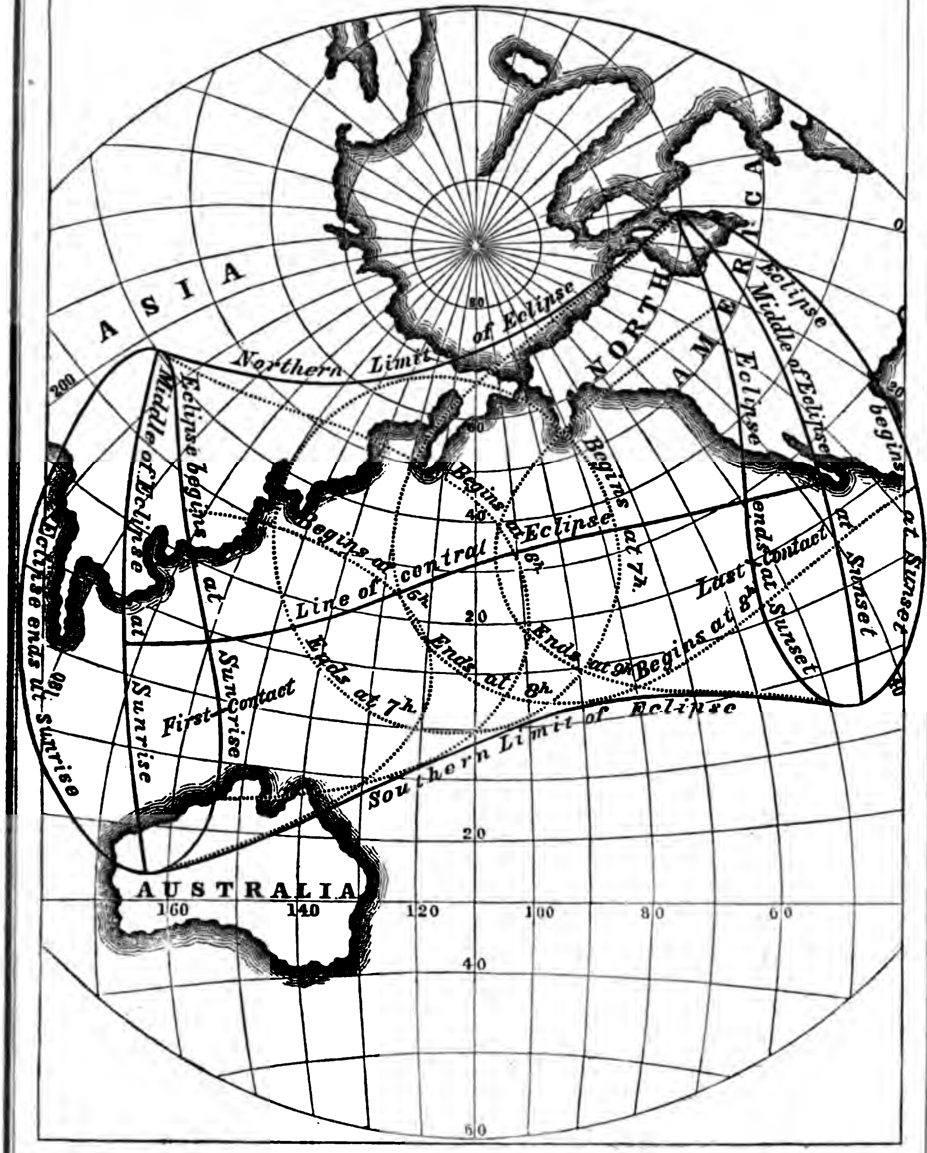
Eclipse ends on the Earth $9^{h}\ 55^{m}.0$, in longitude 53° 24'.7 West from Washington, and in latitude 20° 8'.6 North.

The Central Eclipse will be Annular near its beginning and end, but Total for most of the central line.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.98	9.98	+9.44	+9.46	° ′ ″
4 20	—1.56681	+0.50239	—0.58963	2293	1100	6959	0526	65 52 38.9
4 30	1.47695	0.52032	0.57176	2289	1096	7008	0574	68 22 40.2
4 40	1.38709	0.53825	0.55389	2285	1092	7058	0622	70 52 41.5
4 50	1.29722	0.55617	0.53603	2281	1087	7107	0670	73 22 42.8
5 0	1.20735	0.57408	0.51818	2276	1083	7157	0718	75 52 44.1
5 10	1.11748	0.59198	0.50033	2272	1079	7207	0766	78 22 45.4
5 20	1.02760	0.60988	0.48249	2268	1074	7256	0814	80 52 46.7
5 30	0.93772	0.62777	0.46465	2264	1070	7306	0862	83 22 48.0
5 40	0.84784	0.64565	0.44682	2260	1065	7355	0910	85 52 49.3
5 50	—0.75796	+0.66353	—0.42900	2255	1061	7405	0958	88 22 50.6

ECLIPSE
OF
MAY 5, 1864.



DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.98	9.98	+9.44	+9.46	° ′ ″
6 0	—0.66807	+0.68140	—0.41118	2251	1056	7455	1006	90 52 51.9
6 10	0.57819	0.69926	0.39837	2247	1052	7504	1054	93 22 53.2
6 20	0.48830	0.71711	0.37556	2243	1048	7554	1102	95 52 54.5
6 30	0.39841	0.73496	0.35776	2238	1043	7603	1149	98 22 55.8
6 40	0.30852	0.75280	0.33996	2234	1039	7653	1197	100 52 57.1
6 50	0.21863	0.77063	0.32217	2230	1035	7702	1245	103 22 58.4
7 0	0.12874	0.78845	0.30439	2226	1030	7752	1293	105 52 59.6
7 10	—0.03885	0.80626	0.28661	2222	1026	7801	1341	108 23 0.9
7 20	+0.05104	0.82407	0.26884	2217	1022	7851	1389	110 53 2.2
7 30	0.14093	0.84187	0.25108	2213	1017	7900	1437	113 23 3.5
7 40	0.23083	0.85966	0.23333	2209	1013	7950	1484	115 53 4.8
7 50	0.32072	0.87744	0.21558	2205	1009	7999	1532	118 23 6.1
8 0	0.41061	0.89522	0.19784	2200	1004	8048	1580	120 53 7.4
8 10	0.50050	0.91299	0.18011	2196	1000	8098	1628	123 23 8.6
8 20	0.59039	0.93075	0.16238	2192	0995	8147	1675	125 53 9.9
8 30	0.68028	0.94850	0.14466	2188	0991	8197	1723	128 23 11.2
8 40	0.77017	0.96624	0.12694	2184	0987	8246	1771	130 53 12.5
8 50	0.86006	0.98398	0.10923	2179	0982	8295	1818	133 23 13.8
9 0	0.94995	1.00172	0.09152	2175	0978	8345	1866	135 53 15.1
9 10	1.03984	1.01945	0.07382	2171	0974	8394	1914	138 23 16.3
9 20	1.12972	1.03717	0.05613	2167	0969	8443	1962	140 53 17.6
9 30	1.21960	1.05487	0.03844	2162	0965	8493	2009	143 23 18.9
9 40	1.30948	1.07256	0.02076	2158	0961	8542	2057	145 53 20.2
9 50	1.39936	1.09025	—0.00309	2154	0956	8591	2105	148 23 21.5
10 0	+1.48924	+1.10793	+0.01457	2150	0952	8640	2152	150 53 22.8

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
5 20	+0.06401	+0.06338	7 10	+0.26039	+0.25926
5 30	0.08190	0.08122	7 20	0.27820	0.27703
5 40	0.09978	0.09905	7 30	0.29600	0.29479
5 50	0.11766	0.11687	7 40	0.31379	0.31254
6 0	0.13553	0.13469	7 50	0.33157	0.33029
6 10	0.15339	0.15250	8 0	0.34935	0.34803
6 20	0.17124	0.17031	8 10	0.36712	0.36576
6 30	0.18909	0.18811	8 20	0.38488	0.38349
6 40	0.20693	0.20591	8 30	0.40263	0.40121
6 50	0.22476	0.22370	8 40	0.42037	0.41893
7 0	0.24258	0.24148	8 50	0.43811	0.43664
7 10	+0.26039	+0.25926	9 0	+0.45585	+0.45435

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from simultaneous values for Penumbra, by numerically decreasing log E and increasing log F by 0.000003, and by numerically increasing log G and decreasing log H by 0.000033.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
h m						
4 0	+8985.1	+1794.7	+1788.5	+149.75	+29.91	+29.81
4 30	8986.3	1792.8	1786.8	149.77	29.88	29.78
5 0	8987.3	1790.8	1785.1	149.79	29.85	29.75
5 30	8988.0	1788.7	1783.3	149.80	29.81	29.72
6 0	8988.5	1786.5	1781.5	149.81	29.77	29.69
6 30	8988.8	1784.2	1779.7	149.81	29.74	29.66
7 0	8989.1	1781.9	1777.8	149.82	29.70	29.63
7 30	8989.2	1779.6	1775.8	149.82	29.66	29.60
8 0	8989.2	1777.3	1773.9	149.82	29.62	29.56
8 30	8989.0	1775.0	1772.0	149.82	29.58	29.53
9 0	8988.7	1772.6	1770.1	149.81	29.54	29.50
9 30	8988.2	1770.2	1768.2	149.80	29.50	29.47
10 0	+8987.5	+1767.7	+1766.3	+149.79	+29.46	+29.44

II. An Annular Eclipse of the Sun, October 29–30, 1864, invisible at Washington, with the following elements:—

Washington mean time of ☌ in Right Ascension, October $29^d\ 22^h\ 26^m\ 51^s.7$.

Sun's and Moon's R. A.	$14^h\ 20^m\ 32^s.89$	Hourly Motions	$9^s.76$ and $125^s.24$
Sun's Declination	$-14^\circ\ 1'\ 13''.7$	Hourly Motion	$-\ 0'\ 48''.9$
Moon's Declination	—14 11 34.3	" "	— 7 24.2
Sun's Equa. Hor. Par.	8.6	True Semidiameter	16 7.3
Moon's Equa. Hor. Par.	55 25.9	" "	15 5.5

From these elements may be deduced the following results:—

Eclipse begins on the Earth, October $29^d\ 19^h\ 22^m.6$, Washington mean time, in longitude 23° 6'.1 West from Washington, and in latitude 6° 26'.4 North.

Central Eclipse begins on the Earth $29^d\ 20^h\ 28^m.5$, in longitude 40° 30'.1 West from Washington, and in latitude 2° 42'.6 North.

Central Eclipse at Noon $29^d\ 22^h\ 26^m.9$, in longitude 340° 46'.7 West from Washington, and in latitude 24° 56'.8 South.

Central Eclipse ends on the Earth $30^d\ 0^h\ 15^m.3$, in longitude 271° 48'.2 West from Washington, and in latitude 28° 6'.6 South.

Eclipse ends on the Earth $30^d\ 1^h\ 21^m.1$, in longitude 289° 19'.4 West from Washington, and in latitude 19° 24'.0 South.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.98	9.98	—9.39	—9.37	° ' "
19 20	—1.57626	+0.74956	—0.38005	6435	7454	1170	4722	294 3 30.6
19 30	1.49194	0.72961	0.39999	6430	7450	1236	4790	296 33 31.6
19 40	1.40762	0.70967	0.41992	6426	7446	1302	4859	299 3 32.6
19 50	1.32329	0.68973	0.43984	6422	7441	1369	4928	301 33 33.6
20 0	1.23895	0.66980	0.45976	6418	7437	1435	4997	304 3 34.6
20 10	1.15461	0.64987	0.47967	6413	7433	1501	5066	306 33 35.6
20 20	—1.07027	+0.62994	—0.49958	6409	7429	1567	5135	309 3 36.6

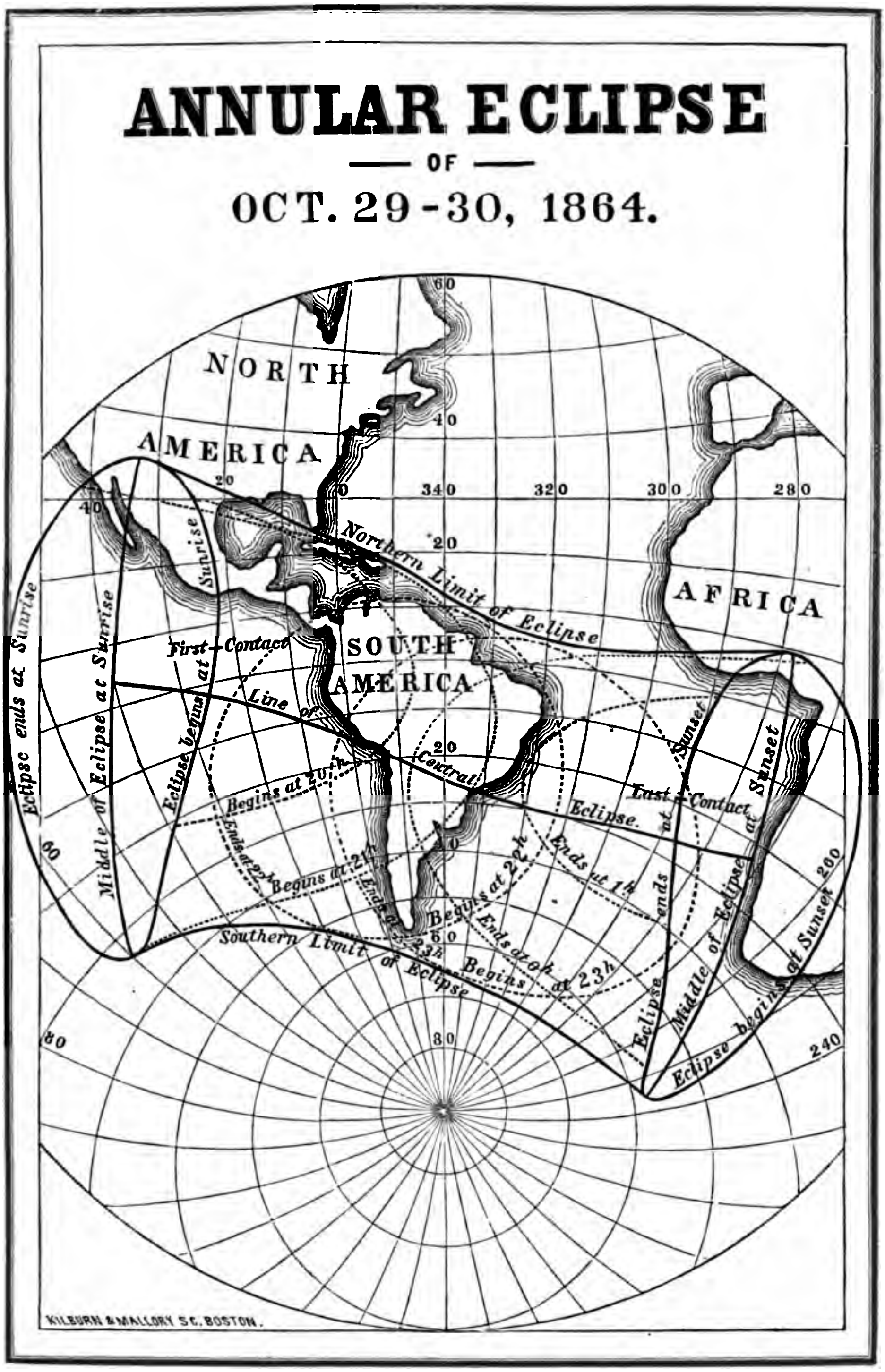
DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.98	9.98	—9.39	—9.37	° ′ ″
20 30	—0.98592	+0.61002	—0.51948	6405	7425	1633	5204	311 33 37.6
20 40	0.90157	0.59010	0.53938	6400	7421	1699	5273	314 3 38.6
20 50	0.81722	0.57019	0.55927	6396	7417	1766	5342	316 33 39.6
21 0	0.73286	0.55028	0.57916	6392	7413	1832	5411	319 3 40.6
21 10	0.64850	0.53038	0.59904	6388	7409	1898	5479	321 33 41.6
21 20	0.56414	0.51048	0.61892	6383	7404	1964	5548	324 3 42.6
21 30	0.47977	0.49058	0.63879	6379	7400	2030	5617	326 33 43.6
21 40	0.39540	0.47069	0.65866	6375	7396	2096	5686	329 3 44.5
21 50	0.31103	0.45080	0.67852	6371	7392	2162	5754	331 33 45.5
22 0	0.22665	0.43091	0.69837	6366	7388	2228	5823	334 3 46.5
22 10	0.14228	0.41103	0.71822	6362	7384	2294	5892	336 33 47.5
22 20	—0.05790	0.39115	0.73806	6358	7380	2360	5960	339 3 48.5
22 30	+0.02648	0.37128	0.75790	6353	7376	2426	6029	341 33 49.5
22 40	0.11086	0.35141	0.77773	6349	7372	2492	6098	344 3 50.5
22 50	0.19524	0.33155	0.79756	6345	7368	2557	6166	346 33 51.5
23 0	0.27963	0.31169	0.81739	6341	7363	2623	6235	349 3 52.5
23 10	0.36401	0.29183	0.83721	6336	7359	2689	6303	351 33 53.5
23 20	0.44839	0.27198	0.85703	6332	7355	2755	6372	354 3 54.4
23 30	0.53278	0.25213	0.87684	6328	7351	2821	6440	356 33 55.4
23 40	0.61716	0.23229	0.89664	6324	7347	2887	6509	359 3 56.4
23 50	0.70155	0.21245	0.91644	6319	7343	2953	6577	1 33 57.4
0 0	0.78594	0.19261	0.93623	6315	7339	3018	6646	4 3 58.4
0 10	0.87032	0.17278	0.95601	6311	7335	3084	6714	6 33 59.4
0 20	0.95471	0.15295	0.97579	6306	7330	3150	6783	9 4 0.4
0 30	1.03910	0.13312	0.99557	6302	7326	3216	6851	11 34 1.4
0 40	1.12348	0.11330	1.01534	6298	7322	3282	6920	14 4 2.3
0 50	1.20786	0.09348	1.03511	6293	7318	3347	6988	16 34 3.3
1 0	1.29225	0.07367	1.05487	6289	7314	3413	7056	19 4 4.3
1 10	1.37664	0.05386	1.07462	6285	7310	3479	7125	21 34 5.3
1 20	1.46102	0.03405	1.09437	6281	7306	3545	7193	24 4 6.3
1 30	+1.54540	+0.01425	—1.11412	6276	7302	3610	7262	26 34 7.3

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
20 20	+0.08398	+0.04638	22 20	—0.15481	—0.19210
20 30	0.06406	0.02648	22 30	0.17468	0.21194
20 40	0.04414	+0.00658	22 40	0.19455	0.23177
20 50	0.02423	—0.01331	22 50	0.21441	0.25160
21 0	+0.00432	0.03320	23 0	0.23427	0.27143
21 10	—0.01558	0.05308	23 10	0.25413	0.29125
21 20	0.03548	0.07296	23 20	0.27398	0.31107
21 30	0.05538	0.09283	23 30	0.29383	0.33088
21 40	0.07527	0.11270	23 40	0.31367	0.35068
21 50	0.09516	0.13256	23 50	0.33351	0.37048
22 0	0.11505	0.15241	0 0	0.35335	0.39027
22 10	0.13493	0.17226	0 10	0.37318	0.41005
22 20	—0.15481	—0.19210	0 20	—0.39301	—0.42983

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from simultaneous values for Penumbra, by numerically in-



ANNULAR ECLIPSE

OF

OCT. 29-30, 1864.

creasing log E and decreasing log F by 0.000002, and by numerically decreasing log G and increasing log H by 0.000040.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.		For one Minute.			For one Second.		
		A.	B.	C.	A'.	B'.	C'.
h	m						
19	0	+8430.7	—1995.4	—1995.0	+140.51	—33.26	—33.25
19	30	8432.2	1994.3	1993.3	140.54	33.24	33.22
20	0	8433.6	1993.2	1991.6	140.56	33.22	33.19
20	30	8434.8	1992.0	1990.0	140.58	33.20	33.17
21	0	8435.9	1990.8	1988.4	140.60	33.18	33.14
21	30	8436.8	1989.5	1986.8	140.61	33.16	33.11
22	0	8437.5	1988.3	1985.2	140.62	33.14	33.09
22	30	8438.0	1987.0	1983.7	140.63	33.12	33.06
23	0	8438.3	1985.8	1982.2	140.64	33.10	33.04
23	30	8438.5	1984.7	1980.6	140.64	33.08	33.01
0	0	8438.6	1983.5	1979.0	140.64	33.06	32.98
0	30	8438.5	1982.3	1977.3	140.64	33.04	32.95
1	0	8438.3	1981.1	1975.6	140.64	33.02	32.93
1	30	+8438.0	—1979.9	—1973.9	+140.63	—33.00	—32.90

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. *H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Jan. 1	*χ* Virginis	5	+18	−57	12 52.7	− 4 55 1	−0.3291	0.5258	−.1883	−9.1010	9.9965
1	B.A.C. 4259	6	+19	−55	12 56.7	− 4 51 7	−0.3015	.5259	−.1883	−9.1031	.9965
1	28 Virginis	6	−31	−90	14 15.0	− 3 35 11	−1.1207	.5264	−.1876	−9.0704	.9970
1	B.A.C. 4312	6½	+81	+25	18 59.1	+ 1 0 19	+1.0641	.5289	−.1850	−9.2220	.9939
1	*ψ* Virginis	5	+31	−41	20 28.8	+ 2 27 20	−0.0709	.5299	−.1841	−9.1847	.9949
2	*g* Virginis	6	+35	−37	3 11.8	+ 8 57 59	+0.0085	.5335	−.1798	−9.2402	.9933
2	50 Virginis	6	+ 2	−78	4 7.1	+ 9 51 20	−0.5946	.5339	−.1791	−9.2223	.9939
2	58 Virginis	6	−25	−90	7 53.6	−10 29 2	−1.0216	.5365	−.1763	−9.2323	.9936
2	*α* Virginis	1	−25	−90	11 38.5	− 6 51 16	−1.0118	.5389	−.1731	−9.2586	.9927
2	*ι* Virginis	5	+65	− 9	12 22.4	− 6 8 45	+0.5111	.5395	−.1724	−9.3178	.9904
2	B.A.C. 4531	6	+57	−15	16 11.1	− 2 27 21	+0.4094	.5417	−.1692	−9.3359	.9896
2	86 Virginis	6	−57	−90	21 32.1	+ 2 43 20	−1.2999	.5458	−.1639	−9.3087	.9908
3	B.A.C. 4679	6½	+33	−34	6 8.2	+11 2 25	+0.0491	.5519	−.1546	−9.3932	.9863
3	B.A.C. 4700	5½	+75	+23	9 2.8	−10 8 50	+1.0158	.5542	−.1511	−9.4312	.9836
4	B.A.C. 4896	6	+34	−30	3 11.1	+ 7 21 56	+0.1222	.5686	−.1258	−9.4714	.9801
4	*ι*¹ Libræ	4½	+71	+42	12 1.0	− 8 7 13	+1.1945	.5756	−.1112	−9.5186	.9750
4	*ι*² Libræ	6½	+71	+22	12 29.2	− 7 40 4	+0.9919	.5762	−.1101	−9.5155	.9753
4	28 Libræ	6	−24	−90	15 42.4	− 4 33 54	−0.8652	.5789	−.1045	−9.4820	.9790
4	B.A.C. 5109	6½	+37	−24	20 34.2	+ 0 7 2	+0.2336	.5828	−.0953	−9.5171	.9751
4	41 Libræ	6	+ 3	−61	23 10.5	+ 2 37 34	−0.3707	.5845	−.0905	−9.5093	.9761
5	*κ* Libræ	5	+18	−42	0 25.6	+ 3 49 49	−0.0882	.5856	−.0878	−9.5177	.9751
5	*λ* Libræ	6	+25	−34	5 4.1	+ 8 17 44	+0.0584	.5888	−.0787	−9.5290	.9737
5	B.A.C. 5281	6	+70	+ 7	6 56.4	+10 5 43	+0.7563	.5903	−.0747	−9.5460	.9714
5	*β*¹ Scorpii	2	−13	−85	9 57.8	−10 59 49	−0.6333	.5924	−.0683	−9.5220	.9745
5	*β*² Scorpii	5½	−14	−86	9 58.0	−10 59 41	−0.6364	.5924	−.0683	−9.5219	.9745
5	*ω*¹ Scorpii	4½	+33	−25	10 29.8	−10 29 4	+0.2117	.5932	−.0669	−9.5401	.9722
5	*ω*² Scorpii	4½	+45	−14	10 43.7	−10 15 42	+0.3996	.5931	−.0665	−9.5443	.9716
5	*ν*¹ Scorpii	7	−50	−90	12 35.6	− 8 28 13	−1.1447	.5944	−.0624	−9.5147	.9754
5	*ν*² Scorpii	4	−49	−90	12 36.0	− 8 27 50	−1.1355	.5944	−.0624	−9.5149	.9754
5	B.A.C. 5395	6	+69	+ 9	13 14.2	− 7 51 6	+0.7993	.5946	−.0614	−9.5553	.9700
5	*ψ* Ophiuchi	5	−24	−90	17 24.0	− 3 51 4	−0.7878	.5976	−.0517	−9.5281	.9738
5	*ω* Ophiuchi	5	+52	− 7	20 32.0	− 0 50 27	+0.5328	.5995	−.0446	−9.5577	.9697
6	B A.C. 5663	6½	−24	−90	4 51.9	+ 7 9 29	−0.7502	.6037	−.0251	−9.5380	.9725
6	B.A.C. 5758	6	+36	−18	9 46.2	+11 51 57	+0.3441	.6067	−.0132	−9.5616	.9691
6	*ξ* Ophiuchi	5	+10	−43	15 26.5	− 6 41 37	−0.0997	.6087	+.0010	−9.5536	.9702
6	B.A.C. 5866	6	+30	−23	16 51.6	− 5 20 4	+0.2508	.6093	+.0044	−9.5604	.9692
6	B.A.C. 5954	6	+68	+11	22 11.9	− 0 12 53	+0.8224	.6108	+.0175	−9.5703	.9677
6	58 Ophiuchi	5	+60	0	23 59.0	+ 1 29 52	+0.6442	.6111	+.0222	−9.5662	.9683
10	8 Aquarii	6	+77	+30	3 54.3	+ 2 20 27	+1.1092	.5924	+.0182	−9.3706	.9877
10	*ν* Aquarii	4½	+45	−25	7 51.5	+ 6 8 36	+0.2150	.5901	+.1873	−9.3150	.9905
10	17 Aquarii	6	− 6	−90	13 22.3	+11 26 45	−0.7213	.5868	+.1937	−9.2352	.9935
10	19 Aquarii	6	+27	−44	14 18.1	−11 39 32	−0.1202	.5865	+.1945	−9.2535	.9929
10	*ξ* Aquarii	4½	−18	−90	19 31.3	− 6 38 4	−0.9245	.5835	+.1999	−9.1677	.9952
10	*c*¹ Capricor.	6	+81	+14	22 32.6	− 3 43 28	+0.9087	.5818	+.2025	−9.2268	.9937
10	*c*² Capricor.	6½	+80	+38	23 4.3	− 3 12 57	+1.2086	.5816	+.2029	−9.2354	.9935
11	30 Aquarii	5½	+36	−37	6 17.1	+ 3 43 54	+0.0057	.5777	+.2082	−9.0967	.9966
11	44 Aquarii	6	+45	−28	12 12.5	+ 9 26 22	+0.1647	.5747	+.2115	−9.0238	.9976
11	51 Aquarii	6	+51	−23	15 13.6	−11 39 6	+0.2528	.5731	+.2129	−8.9833	.9980
11	*κ* Aquarii	5	+85	+15	21 9.0	− 5 56 22	+0.9307	.5703	+.2150	−8.9340	9.9984
12	3 Piscium	6	−45	−90	7 12.3	+ 3 45 37	−1.2703	.5660	+.2166	−7.9771	0.0000
12	B.A.C. 8152	6½	+90	+10	17 22.5	−10 25 23	+0.8422	.5620	+.2159	−7.8997	.0000
12	*κ* Piscium	4½	+49	−26	18 54.1	− 8 56 56	+0.1990	.5616	+.2156	+7.9519	.0000
12	9 Piscium	6	+59	−17	19 2.6	− 8 48 41	+0.3660	.5614	+.2155	+7.8186	.0000
12	15 Piscium	6½	+90	+19	22 44.7	− 6 14 16	+0.9770	.5603	+.2147	+7.9021	0.0000
12	16 Piscium	6	+53	−22	23 9.7	− 4 50 9	+0.2732	0.5602	+.2145	+8.3720	9.9999

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Jan. 13	λ Piscium	5	+90	+31	1 42.5	− 2 22 31	+1.1389	0.5594	+.2137	+8.2560	9.9999
13	19 Piscium	6	+28	−46	3 40.0	− 0 29 1	−0.1618	.5590	+.2129	+8.6786	.9995
13	B.A.C. 8276	6½	+90	+64	4 45.4	+ 0 34 8	+1.3571	.5587	+.2125	+8.4068	.9999
13	22 Piscium	6	+90	+16	6 10.9	+ 1 56 40	+0.9371	.5582	+.2119	+8.5796	.9997
13	45 Piscium	6	− 2	−83	21 31.2	− 7 14 13	−0.7181	.5550	+.2030	+9.0822	.9968
14	51 Piscium	6½	+83	0	0 35.1	− 4 16 30	+0.6515	.5546	+.2008	+9.0339	.9975
15	π Piscium	6	+90	+12	6 16.1	+ 0 24 52	+0.8080	.5531	+.1715	+9.2977	.9913
15	104 Piscium	6½	−49	−77	7 13.6	+ 1 20 29	−1.2712	.5530	+.1702	+9.3712	.9876
16	27 Arictis	6	−68	−73	6 52.4	+ 0 11 46	−1.3176	.5541	+.1377	+9.4684	.9804
16	40 Arietis	6	−17	−73	14 55.4	+ 7 58 28	−0.9173	.5551	+.1253	+9.4833	.9789
16	π Arietis	5½	+37	−27	15 17.1	+ 8 19 29	−0.0005	.5546	+.1249	+9.4633	.9808
16	ρ^1 Arietis	7½	+38	−26	17 51.0	+10 48 9	+0.0114	.5549	+.1206	+9.4704	.9802
16	ρ^2 Arietis	6	+ 5	−63	18 14.7	+11 11 7	−0.5768	.5550	+.1200	+9.4848	.9787
16	ρ^3 Arietis	6	+24	−40	18 31.0	+11 26 51	−0.2254	.5550	+.1193	+9.4776	.9795
16	53 Arietis	6	+70	+ 1	23 33.3	− 7 41 0	+0.4912	.5554	+.1111	+9.4746	.9798
16	54 Arietis	6½	+12	−52	23 57.3	− 7 17 51	−0.4440	.5554	+.1105	+9.4963	.9775
17	δ Arietis	4½	−60	−71	1 25.3	− 5 52 45	−1.2871	.5554	+.1078	+9.5172	.9751
17	13 Tauri	6½	+37	−23	15 24.0	+ 7 37 35	−0.0051	.5563	+.0835	+9.5184	.9750
18	ω^1 Tauri	6	+90	+30	3 36.2	− 4 34 59	+0.9024	.5568	+.0615	+9.5180	.9750
18	ω^2 Tauri	5½	+39	−18	7 16.3	− 1 2 19	+0.0415	.5569	+.0550	+9.5390	.9723
18	53 Tauri	6½	+ 7	−53	8 14.5	− 0 6 8	−0.5234	.5568	+.0531	+9.5506	.9707
18	56 Tauri	6½	−46	−69	8 18.4	− 0 2 19	−1.2048	.5568	+.0530	+9.5630	.9688
19	ι Tauri	5	+10	−46	4 7.7	− 4 53 11	−0.4764	.5563	+.0156	+9.5620	.9690
19	*l* Tauri	5½	+90	+29	6 19.4	− 2 45 54	+0.8155	.5559	+.0115	+9.5389	.9723
19	105 Tauri	6	+ 3	−54	6 20.4	− 2 45 0	−0.5897	.5559	+.0115	+9.5645	.9686
19	*n* Tauri	6	−27	−68	11 31.8	+ 2 16 1	−1.0278	.5553	+.0013	+9.5727	.9673
19	*o* Tauri	6	−16	−68	15 22.6	+ 5 59 3	−0.8882	.5549	−.0060	+9.5701	.9677
19	B.A.C. 1733	6½	+90	+21	18 11.1	+ 8 41 52	+0.6702	.5545	−.0109	+9.5418	.9720
19	ζ Tauri	3½	+31	−22	20 0.7	+10 27 50	−0.1014	.5541	−.0143	+9.5554	.9700
20	B.A.C. 1835	6½	+41	−13	0 58.7	− 8 44 4	+0.0655	.5535	−.0236	+9.5507	.9707
20	χ^1 Orionis	4½	+84	+16	3 47.7	− 6 0 38	+0.6187	.5528	−.0288	+9.5392	.9723
20	χ^2 Orionis	6	+90	+57	4 3.6	− 5 45 20	+1.1907	.5527	−.0292	+9.5282	.9738
20	χ^3 Orionis	5	+90	+47	8 1.2	− 1 55 34	+1.0962	.5521	−.0364	+9.5275	.9739
20	χ^4 Orionis	5	+81	+14	8 13.4	− 1 43 48	+0.5943	.5520	−.0367	+9.5369	.9726
20	68 Orionis	6	+90	+25	12 1.0	+ 1 56 18	+0.7956	.5511	−.0436	+9.5302	.9735
20	15 Geminor.	6	− 5	−69	19 23.1	+ 9 3 59	−0.7342	.5490	−.0569	+9.5518	.9705
20	16 Geminor.	6	+14	−45	19 28.4	+ 9 9 4	−0.4128	.5490	−.0570	+9.5458	.9714
20	ν Geminor.	4½	+29	−28	19 57.5	+ 9 37 16	−0.1329	.5490	−.0577	+9.5401	.9722
21	B.A.C. 2432	6½	+23	−39	21 55.5	+10 45 13	−0.2435	.5414	−.1000	+9.5022	.9769
22	*f* Geminor.	6	+10	−56	5 57.4	− 5 28 0	−0.4850	.5385	−.1118	+9.4895	.9782
22	1 Cancri	6	+72	0	14 40.4	+ 2 58 43	+0.5192	.5354	−.1239	+9.4442	.9825
22	5 Cancri	6	+ 9	−59	16 54.2	+ 5 8 26	−0.5117	.5346	−.1267	+9.4616	.9810
23	29 Cancri	6	+65	− 7	6 37.2	− 5 33 32	+0.4295	.5298	−.1436	+9.4031	.9856
23	B.A.C. 2872	6½	+90	+ 8	9 15.2	− 3 0 18	+0.7036	.5288	−.1463	+9.3750	.9874
23	A^1 Cancri	6	+79	+ 1	14 6.2	+ 1 41 55	+0.5983	.5275	−.1516	+9.3573	.9884
23	A^2 Cancri	6	+90	+11	16 2.1	+ 3 34 26	+0.9253	.5267	−.1536	+9.3387	.9894
23	60 Cancri	6	+90	+ 7	20 40.8	+ 8 4 55	+0.7158	.5252	−.1583	+9.3228	.9902
23	α Cancri	4	+51	−19	21 59.9	+ 9 21 37	+0.2412	.5247	−.1595	+9.3312	.9898
24	κ Cancri	5	+90	+ 9	8 50.3	− 9 56 30	+0.7579	.5232	−.1641	+9.2887	.9916
24	B.A.C. 3122	6½	+14	−58	3 52.5	− 8 56 10	−0.4169	.5230	−.1650	+9.3219	.9902
24	ω Leonis	6	+86	+ 2	13 42.9	+ 0 37 2	+0.6670	.5202	−.1730	+9.2240	.9938
24	*h* Leonis	6	+16	−58	15 33.2	+ 2 24 11	−0.3941	.5196	−.1744	+9.2528	.9929
25	π Leonis	5	−49	−82	6 35.4	− 6 59 30	−1.2915	.5163	−.1840	+9.1793	.9950
25	14 Sextantis	6	+90	+ 5	10 8.5	− 3 32 27	+0.7423	.5157	−.1858	+9.0382	.9974
25	16 Sextantis	6	+30	−43	11 26.9	− 2 16 17	−0.1274	0.5155	−.1865	+9.0755	9.9969

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.		Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
				Northern.	Southern.		H	Y	p′	q′	Log sin D	Log cos D
				°	°	h m	h m s					
Jan.	26	34 Sextantis	6	− 2	−85	5 25.6	− 8 48 7	−0.7229	0.5136	−.1934	+8.8737	9.9988
	26	36 Sextantis	6	+50	−25	6 47.9	− 7 28 7	+0.2195	.5136	−.1937	+8.7466	.9993
	26	B.A.C. 3726	6	+90	+27	10 37.1	− 3 45 26	+1.0879	.5132	−.1946	+8.4835	.9998
	26	55 Leonis	6	+90	+23	12 29.3	− 1 56 23	+1.0402	.5132	−.1949	+8.4056	9.9999
	26	p^3 Leonis	6	+90	+21	16 45.9	+ 2 12 57	+1.0132	.5131	−.1956	+8.1034	0.0000
	26	p^5 Leonis	5	+37	−36	22 13.7	+ 7 31 33	+0.0095	.5133	−.1962	+8.0653	0.0000
	28	χ Virginis	5	+32	−40	19 28.6	+ 3 28 28	−0.0556	.5229	−.1865	−9.1011	9.9965
	28	B.A.C. 4259	6	+34	−39	19 32.7	+ 3 32 26	−0.0280	.5228	−.1865	−9.1032	.9965
	28	28 Virginis	6	−12	−90	20 52.2	+ 4 49 36	−0.8545	.5234	−.1858	−9.0705	.9970
	29	ψ Virginis	5	+47	−26	3 12.5	+10 58 34	+0.2079	.5258	−.1823	−9.1848	.9949
	29	g Virginis	6	+51	−21	10 3.4	− 6 22 55	+0.2898	.5289	−.1778	−9.2403	.9933
	29	50 Virginis	6	+17	−56	10 59.8	− 5 28 15	−0.3198	.5294	−.1770	−9.2224	.9939
	29	58 Virginis	6	− 8	−90	14 51.3	− 1 43 48	−0.7516	.5312	−.1741	−9.2324	.9936
	29	α Virginis	1	− 8	−90	18 41.3	+ 1 59 7	−0.7423	.5332	−.1710	−9.2587	.9927
	29	i Virginis	5	+78	+ 8	19 26.2	+ 2 42 44	+0.7991	.5337	−.1704	−9.3179	.9904
	29	B.A.C. 4531	6	+76	0	23 10.5	+ 6 19 42	+0.6778	.5359	−.1672	−9.3360	.9896
	30	86 Virginis	6	−28	−90	4 49.9	+11 48 48	−1.0371	.5389	−.1618	−9.3088	.9908
	30	B.A.C. 4679	6½	+50	−19	13 40.5	− 3 37 32	+0.3270	.5442	−.1524	−9.3932	.9863
	30	B.A.C. 4700	5½	+75	+59	16 40.3	− 0 43 34	+1.3059	.5463	−.1490	−9.4312	.9836
	31	B.A.C. 4896	6	+49	−16	11 24.2	− 6 37 12	+0.3747	.5589	−.1240	−9.4714	.9801
	31	ι^2 Libræ	6½	+71	+53	21 1.9	+ 2 40 31	+1.2610	.5656	−.1090	−9.5155	.9753
Feb.	1	28 Libræ	6	− 9	−84	0 22.2	+ 5 53 43	−0.6288	.5682	−.1031	−9.4820	.9790
	1	B.A.C. 5109	6½	+53	−10	5 24.6	+10 45 20	+0.4812	.5716	−.0944	−9.5171	.9751
	1	41 Libræ	6	+15	−46	8 6.7	−10 38 21	−0.1535	.5735	−.0898	−9.5093	.9761
	1	JUPITER		−35	−90	8 38.0	−10 8 11	−1.0018	.5695	−.0875	−9.4914	.9780
	1	κ Libræ	5	+32	−28	9 24.6	− 9 23 21	+0.1491	.5748	−.0871	−9.5177	.9751
	1	λ Libræ	6	+39	−20	14 13.3	− 4 45 8	+0.2917	.5777	−.0783	−9.5290	.9737
	1	B.A.C. 5281	6	+70	+24	16 9.8	− 2 52 59	+0.9977	.5789	−.0746	−9.5460	.9714
	1	β^1 Scorpii	2	− 1	−64	19 17.9	+ 0 8 11	−0.4182	.5810	−.0683	−9.5220	.9745
	1	β^2 Scorpii	5½	− 1	−64	19 18.1	+ 0 8 22	−0.4214	.5810	−.0683	−9.5219	.9745
	1	ω^1 Scorpii	4½	+48	−12	19 51.1	+ 0 40 9	+0.4391	.5817	−.0670	−9.5401	.9722
	1	ω^2 Scorpii	4½	+62	− 1	20 5.5	+ 0 54 1	+0.6298	.5818	−.0667	−9.5443	.9716
	1	ν^1 Scorpii	7	−33	−90	22 1.4	+ 2 45 36	−0.9417	.5830	−.0627	−9.5147	.9754
	1	ν^2 Scorpii	4	−32	−90	22 1.8	+ 2 46 0	−0.9324	.5829	−.0627	−9.5149	.9754
	1	B.A.C. 5396	6	+69	+27	22 41.4	+ 3 24 7	+1.0318	.5837	−.0612	−9.5553	.9700
	2	ψ Ophiuchi	5	−12	−79	3 0.3	+ 7 33 16	−0.5864	.5861	−.0524	−9.5281	.9738
	2	ω Ophiuchi	5	+69	+ 6	6 15.1	+10 40 38	+0.7487	.5882	−.0455	−9.5577	.9697
	2	B A.C. 5663	6½	−14	−78	14 52.4	− 5 1 54	−0.5678	.5929	−.0263	−9.5380	.9725
	2	B.A.C. 5758	6	+50	− 7	19 56.7	− 0 9 30	+0.5328	.5957	−.0147	−9.5616	.9691
	3	ξ Ophiuchi	5	+19	−33	1 48.0	+ 5 27 59	+0.0718	.5985	−.0010	−9.5536	.9702
	3	B.A.C. 5866	6	+41	−13	3 15.7	+ 6 52 12	+0.4242	.5991	+.0022	−9.5604	.9692
	3	B.A.C. 5954	6	+68	+24	8 45.7	−11 50 55	+0.9911	.6012	+.0156	−9.5703	.9677
	3	58 Ophiuchi	5	+69	+10	10 35.9	−10 5 3	+0.8067	.6019	+.0201	−9.5662	.9683
	3	B.A.C. 6081	6½	+ 2	−56	17 4.2	− 3 52 21	−0.3048	.6037	+.0353	−9.5408	.9721
	3	B.A.C. 6098	6	+26	−29	18 4.6	− 2 54 25	+0.1398	.6041	+.0378	−9.5490	.9709
	3	μ^1 Sagittarii	4	+65	+ 2	22 22.9	+ 1 13 31	+0.6809	.6052	+.0486	−9.5561	.9699
	3	15 Sagittarii	5	+42	−15	22 57.0	+ 1 46 14	+0.3837	.6052	+.0496	−9.5497	.9708
	3	16 Sagittarii	6	+22	−34	22 57.7	+ 1 46 52	+0.0445	.6052	+.0497	−9.5428	.9718
	4	21 Sagittarii	5	+47	−12	2 52.1	+ 5 31 51	+0.4417	.6058	+.0591	−9.5466	.9713
	4	B.A.C. 6287	6	−60	−90	4 46.6	+ 7 21 42	−1.2325	.6060	+.0637	−9.5085	.9761
	4	B A.C. 6292	6	−39	−90	5 12.9	+ 7 46 56	−1.0242	.6062	+.0644	−9.5125	.9757
	4	B.A.C. 6299	7	−23	−90	5 25.4	+ 7 58 57	−0.7850	.6063	+.0654	−9.5174	.9751
	4	B.A.C. 6301	7	−32	−90	5 39.3	+ 8 12 16	−0.9215	.6063	+.0658	−9.5141	.9755
	4	29 Sagittarii	6	+70	+21	12 14.8	− 9 28 18	+0.9627	.6067	+.0811	−9.5438	.9716
	4	B.A.C. 6536	6½	+65	− 1	19 26.5	− 2 34 5	+0.6393	0.6069	+.0981	−9.5235	9.9743

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Feb. 4	*d* Sagittarii	5	+70	+ 3	23 3.5	+ 0 54 6	+0.7021	0.6065	+.1058	—9.5168	9.9752
5	ϱ^1 Sagittarii	4	+14	—49	0 38.5	+ 2 25 15	—0.2034	.6065	+.1096	—9.4923	.9780
5	ϱ^2 Sagittarii	5½	+39	—23	0 41.6	+ 2 28 13	+0.2527	.6065	+.1097	—9.5028	.9768
5	B.A.C. 6658	6	+63	— 3	3 6.5	+ 4 47 18	+0.5962	.6062	+.1147	—9.5044	.9766
5	e^1 Sagittarii	5½	—18	—90	8 2.4	+ 9 31 15	—0.8070	.6052	+.1252	—9.4559	.9815
5	e^2 Sagittarii	5	—23	—90	8 44.5	+10 11 38	—0.8782	.6051	+.1269	—9.4518	9.9819
9	B.A.C. 8152	6½	+81	— 2	3 11.7	+ 1 11 53	+0.6340	.5735	+.2182	—7.9003	0.0000
9	κ Piscium	4½	+37	—37	4 40.0	+ 2 37 4	—0.0023	.5731	+.2180	+7.9515	.0000
9	9 Piscium	6	+46	—28	5 48.2	+ 3 44 59	+0.1618	.5731	+.2179	+7.8180	.0000
9	15 Piscium	6½	+90	+ 5	8 22.4	+ 6 11 26	+0.7551	.5719	+.2170	+7.9917	0.0000
9	16 Piscium	6	+40	—33	8 46.4	+ 6 34 38	+0.0618	.5717	+.2170	+8.3718	9.9999
9	λ Piscium	5	+90	+14	11 13.8	+ 8 56 43	+0.9087	.5712	+.2163	+8.2558	.9999
9	19 Piscium	6	+17	—59	13 7.0	+10 45 55	—0.3749	.5708	+.2156	+8.6785	.9995
9	B.A.C. 8276	6½	+90	+30	14 10.0	+11 46 39	+1.1174	.5706	+.2152	+8.4067	.9999
9	22 Piscium	6	+89	+ 2	15 32.3	—10 53 58	+0.7016	.5699	+.2145	+8.5795	.9997
10	45 Piscium	6	—17	—83	6 18.3	+ 3 20 49	—0.9517	.5670	+.2061	+9.0821	.9968
10	51 Piscium	6½	+61	—14	9 15.4	+ 6 11 43	+0.3901	.5664	+.2038	+9.0339	.9975
10	δ Piscium	4½	+90	+38	16 26.3	—10 52 30	+1.1907	.5652	+.1974	+9.0762	.9969
11	π Piscium	6	+71	— 5	13 53.2	+ 9 49 40	+0.5144	.5631	+.1738	+9.2976	.9913
12	40 Arietis	6	—41	—73	21 36.8	— 7 32 32	—1.1951	.5612	+.1267	+9.4833	.9789
12	π Arietis	5½	+21	—44	21 58.0	— 7 12 1	—0.2901	.5613	+.1263	+9.4633	.9808
13	ϱ^1 Arietis	7½	+21	—43	0 28.4	— 4 46 54	—0.2781	.5613	+.1219	+9.4704	.9802
13	ϱ^2 Arietis	6	—13	—73	0 51.6	— 4 24 26	—0.8586	.5613	+.1214	+9.4848	.9787
13	ϱ^3 Arietis	6	+ 8	—58	1 7.6	— 4 9 2	—0.5116	.5612	+.1211	+9.4776	.9795
13	53 Arietis	6	+49	—15	6 3.4	+ 0 36 35	+0.1966	.5595	+.1123	+9.4746	.9798
13	54 Arietis	6½	— 4	—72	6 26.9	+ 0 59 16	—0.7248	.5594	+.1114	+9.4963	.9775
13	13 Tauri	6½	+21	—40	21 37.3	— 8 21 40	—0.2867	.5603	+.0848	+9.5184	.9750
14	ω^1 Tauri	6	+84	+11	9 40.1	+ 3 16 24	+0.6216	.5591	+.0626	+9.5180	.9750
14	ω^2 Tauri	5½	+24	—33	13 18.0	+ 6 46 49	—0.2295	.5590	+.0561	+9.5390	.9723
14	53 Tauri	6½	— 9	—69	14 15.6	+ 7 42 26	—0.7894	.5589	+.0542	+9.5506	.9707
15	ι Tauri	5	— 5	—69	10 1.4	+ 2 47 55	—0.7236	.5560	+.0168	+9.5620	.9690
15	B.A.C. 1563	6½	+90	+62	11 11.3	+ 3 55 28	+1.2241	.5559	+.0147	+9.5260	.9740
15	*l* Tauri	5½	+77	+14	12 12.7	+ 4 54 48	+0.5649	.5558	+.0128	+9.5389	.9723
15	105 Tauri	6	—12	—69	12 13.6	+ 4 55 41	—0.8333	.5558	+.0128	+9.5645	.9686
15	B.A.C. 1651	6½	+90	+63	18 14.1	+10 44 3	+1.2221	.5546	+.0015	+9.5271	.9739
15	*o* Tauri	6	—36	—69	21 14.8	—10 21 23	—1.1205	.5542	—.0041	+9.5701	.9677
16	B.A.C. 1733	6½	+66	+ 8	0 3.3	— 7 38 30	+0.4364	.5535	—.0094	+9.5418	.9720
16	ζ Tauri	3½	+18	—36	1 52.9	— 5 52 31	—0.3301	.5530	—.0128	+9.5554	.9700
16	B.A.C. 1835	6½	+28	—26	6 51.1	— 1 4 14	—0.1567	.5520	—.0220	+9.5507	.9707
16	χ^1 Orionis	4½	+63	+ 4	9 40.4	+ 1 39 25	+0.3992	.5513	—.0272	+9.5392	.9723
16	χ^2 Orionis	6	+90	+38	9 56.2	+ 1 54 45	+0.9703	.5511	—.0275	+9.5282	.9738
16	χ^3 Orionis	5	+90	+31	13 54.3	+ 5 44 57	+0.8823	.5502	—.0346	+9.5275	.9739
16	χ^4 Orionis	5	+62	+ 2	14 6.5	+ 5 56 45	+0.3821	.5501	—.0349	+9.5369	.9726
16	68 Orionis	6	+80	+13	17 54.7	+ 9 37 27	+0.5892	.5492	—.0400	+9.5302	.9735
16	71 Orionis	5½	+90	+58	19 15.7	+ 9 55 50	+1.2114	.5489	—.0440	+9.5170	.9751
17	15 Geminor.	6	—19	—69	1 18.2	— 7 13 32	—0.9262	.5474	—.0545	+9.5518	.9705
17	16 Geminor.	6	+ 2	—59	1 23.5	— 7 8 23	—0.6048	.5471	—.0550	+9.5458	.9714
17	ν Geminor.	4½	+18	—39	1 52.8	— 6 40 5	—0.3243	.5470	—.0556	+9.5401	.9722
18	B.A.C. 2432	6½	+15	—48	3 57.3	— 5 25 35	—0.3860	.5393	—.0975	+9.5022	.9769
18	*f* Geminor.	6	+ 3	—65	12 1.2	+ 2 23 12	—0.6107	.5367	—.1091	+9.4895	.9782
18	1 Cancri	6	+63	— 5	20 46.0	+10 51 51	+0.4126	.5340	—.1213	+9.4443	.9825
18	5 Cancri	6	+ 2	—67	23 0.3	—10 57 58	—0.6135	.5333	—.1240	+9.4617	.9810
19	29 Cancri	6	+35	—31	12 45.5	+ 2 22 9	—0.0268	.5291	—.1409	+9.4032	.9856
19	B.A.C. 2872	6½	+84	+ 5	15 23.7	+ 4 55 40	+0.6400	.5286	—.1440	+9.3750	.9874
19	A^1 Cancri	6	+74	— 1	20 15.0	+ 9 38 15	+0.5455	0.5271	—.1490	+9.3574	9.9884

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Feb. 19	A^2 Cancri	6	+90	+18	22 11.1	+11 30 51	+0.8780	0.5265	—.1510	+9.3388	9.9894
20	60 Cancri	6	+88	+ 5	2 49.9	— 7 58 36	+0.6800	.5253	—.1558	+9.3228	.9902
20	α Cancri	4	+49	—21	4 8.9	— 6 41 54	+0.2087	.5249	—.1570	+9.3312	.9898
20	κ Cancri	5	+90	+ 8	8 59.2	— 2 0 11	+0.7374	.5238	—.1616	+9.2887	.9916
20	B.A.C. 3122	6½	+13	—59	10 1.5	— 0 59 42	—0.4352	.5236	—.1625	+9.3218	.9902
20	ω Leonis	6	+87	+ 3	19 50.7	+ 8 32 22	+0.6736	.5212	—.1708	+9.2240	.9938
20	h Leonis	6	+16	—57	21 40.8	+10 19 14	—0.3823	.5210	—.1722	+9.2528	.9929
21	B.A.C. 3407	6	—59	—81	11 32.8	— 0 12 47	—1.3332	.5184	—.1811	+9.1922	.9947
21	π Leonis	5	—42	—82	12 39.8	+ 0 52 19	—1.2411	.5184	—.1821	+9.1793	.9950
21	14 Sextantis	6	+90	+ 9	16 11.9	+ 4 18 23	+0.8006	.5180	—.1841	+9.0382	.9974
21	16 Sextantis	6	+33	—39	17 29.9	+ 5 34 9	—0.0653	.5177	—.1848	+9.0754	.9969
22	34 Sextantis	6	+ 3	—78	11 22.3	— 1 4 0	—0.6157	.5165	—.1920	+8.8737	.9988
22	36 Sextantis	6	+56	—19	12 44.1	+ 0 15 28	+0.3292	.5163	—.1923	+8.7462	.9993
22	B.A.C. 3726	6	+90	+38	16 31.7	+ 3 56 39	+1.2064	.5164	—.1933	+8.4832	.9998
22	55 Leonis	6	+90	+34	18 23.2	+ 5 44 58	+1.1633	.5164	—.1935	+8.4052	9.9999
22	p^2 Leonis	6	+90	+33	22 38.0	+ 9 52 29	+1.1463	.5165	—.1945	+8.1029	0.0000
23	p^3 Leonis	6	—69	—88	0 24.3	+11 35 49	—1.3671	.7165	—.1947	+8.6712	9.9995
23	p^5 Leonis	5	+45	—28	4 3.6	— 8 51 9	+0.1558	.5168	—.1951	+8.0647	0.0000
25	χ Virginis	5	+46	—27	1 4.3	+10 51 28	+0.1796	.5252	—.1856	—9.1012	9.9965
25	B.A.C. 4259	6	+47	—25	1 8.3	+10 55 26	+0.2076	.5252	—.1856	—9.1032	.9965
25	28 Virginis	6	+ 1	—79	2 27.7	—11 47 33	—0.6184	.5255	—.1848	—9.0705	.9970
25	ψ Virginis	5	+63	—12	8 47.6	— 5 38 58	+0.4555	.5277	—.1813	—9.1849	.9949
25	g Virginis	6	+69	— 7	15 38.8	+ 0 59 49	+0.5471	.5304	—.1766	—9.2403	.9933
25	50 Virginis	6	+30	—40	16 35.2	+ 1 54 33	—0.0634	.5306	—.1759	—9.2225	.9939
25	58 Virginis	6	+ 7	—65	20 27.3	+ 5 39 35	—0.4923	.5323	—.1730	—9.2324	.9936
26	α Virginis	1	+ 7	—67	0 18.1	+ 9 23 21	—0.4787	.5338	—.1700	—9.2587	.9927
26	i Virginis	5	+78	+27	1 3.3	+10 7 6	+1.0703	.5341	—.1693	—9.3179	.9904
26	B.A.C. 4531	6	+78	+20	4 58.7	—10 4 44	+0.9710	.5360	—.1658	—9.3360	.9896
26	86 Virginis	6	—10	—90	10 30.2	— 4 43 34	—0.7654	.5385	—.1605	—9.3088	.9908
26	B.A.C. 4679	6½	+70	— 3	19 25.5	+ 3 54 52	+0.6133	.5430	—.1510	—9.3933	.9863
27	8 Libræ	6	—46	—90	17 5.9	+ 0 52 44	—1.1779	.5546	—.1233	—9.4251	.9841
27	α^2 Libræ	2½	—43	—90	17 11.1	+ 0 57 44	—1.1410	.5546	—.1232	—9.4262	.9840
27	B.A.C. 4896	6	+72	+ 2	17 28.2	+ 1 14 14	+0.6847	.5549	—.1225	—9.4714	.9801
28	28 Libræ	6	+ 7	—58	6 42.7	— 9 58 14	—0.3417	.5623	—.1020	—9.4820	.9790
28	B.A.C. 5109	6½	+71	+ 8	11 52.6	— 4 59 9	+0.7809	.5652	—.0934	—9.5171	.9751
28	41 Libræ	6	+32	—28	14 39.0	— 2 18 37	+0.1553	.5668	—.0885	—9.5093	.9761
28	κ Libræ	5	+50	—12	15 58.9	— 1 1 30	+0.4437	.5675	—.0862	—9.5177	.9751
28	JUPITER		— 9	—78	19 5.5	+ 1 58 29	—0.5782	.5677	—.0805	—9.5018	.9769
28	λ Libræ	6	+60	— 3	20 55.7	+ 3 44 48	+0.5865	.5702	—.0773	—9.5290	.9737
29	β^1 Scorpii	2	+14	—45	2 9.3	+ 8 47 8	—0.1353	.5731	—.0676	—9.5220	.9745
29	β^2 Scorpii	5½	+14	—45	2 9.4	+ 8 47 19	—0.1386	.5731	—.0676	—9.5219	.9745
29	ω^1 Scorpii	4½	+70	+ 6	2 43.5	+ 9 20 7	+0.7340	.5735	—.0663	—9.5401	.9722
29	ω^2 Scorpii	4½	+70	+19	2 58.3	+ 9 34 26	+0.9270	.5735	—.0659	—9.5443	.9716
29	ν^1 Scorpii	7	—16	—90	4 57.8	+11 29 38	—0.6679	.5744	—.0620	—9.5147	.9754
29	ν^2 Scorpii	4	—15	—88	4 58.2	+11 30 1	—0.6583	.5744	—.0620	—9.5149	.9754
29	ψ Ophiuchi	5	+ 3	—56	10 6.3	— 7 33 8	—0.3109	.5769	—.0520	—9.5281	.9738
29	ω Ophiuchi	5	+69	+28	13 27.6	— 4 19 16	+1.0423	.5789	—.0449	—9.5577	.9697
29	B A.C. 5663	6½	+ 1	—56	22 22.9	+ 4 16 13	—0.3018	.5830	—.0262	—9.5380	.9725
29	B.A.C. 5700	6½	—63	—90	23 54.6	+ 5 44 33	—1.2348	.5836	—.0233	—9.5197	.9748
Mar. 1	B.A.C. 5758	6	+69	+11	3 38.2	+ 9 19 43	+0.8117	.5853	—.0151	—9.5616	.9691
1	ξ Ophiuchi	5	+35	—18	9 42.6	— 8 49 41	+0.3367	.5873	—.0018	—9.5536	.9702
1	B.A.C. 5866	6	+64	+ 3	11 13.6	— 7 22 8	+0.6934	.5879	+.0012	—9.5604	.9692
1	58 Ophiuchi	5	+69	+31	18 50.8	— 0 2 25	+1.0737	.5905	+.0184	—9.5662	.9683
2	B.A.C. 6081	6½	+14	—41	1 34.2	+ 6 25 28	—0.0662	.5921	+.0337	—9.5408	.9721
2	B.A.C. 6098	6	+41	—15	2 36.9	+ 7 25 46	+0.3845	0.5924	+.0360	—9.5490	9.9709

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Mar. 2	μ^1 Sagittarii	4	+69	+19	7 5.3	+11 43 50	+0.9285	0.5933	+.0458	—9.5561	9.9699
2	15 Sagittarii	5	+61	— 1	7 40.8	—11 42 7	+0.6253	.5933	+.0473	—9.5497	.9708
2	16 Sagittarii	6	+35	—21	7 41.5	—11 41 28	+0.2802	.5933	+.0474	—9.5428	.9718
2	21 Sagittarii	5	+66	+ 2	11 45.1	— 7 47 19	+0.6778	.5942	+.0564	—9.5466	.9713
2	B.A.C. 6287	6	—40	—90	13 44.0	— 5 53 2	—1.0285	.5943	+.0609	—9.5085	.9761
2	B A.C. 6292	6	—25	—90	14 11.3	— 5 26 44	—0.8173	.5944	+.0616	—9.5125	.9757
2	B.A C. 6299	7	—11	—78	14 24.3	— 5 14 15	—0.5744	.5946	+.0625	—9.5174	.9751
2	B.A.C. 6301	7	—18	—90	14 38.7	— 5 0 24	—0.7137	.5946	+.0630	—9.5141	.9755
2	29 Sagittarii	6	+70	+43	21 29.4	+ 1 34 16	+1.1910	.5952	+.0782	—9.5438	.9716
3	B.A.C. 6536	6½	+71	+13	4 57.3	+ 8 44 40	+0.8482	.5957	+.0941	—9.5235	.9743
3	*d* Sagittarii	.5	+71	+17	8 42.1	—11 39 13	+0.9043	.5954	+.1021	—9.5168	.9752
3	ϱ^1 Sagittarii	4	+24	—38	10 20.5	—10 4 39	—0.0188	.5954	+.1052	—9.4923	.9780
3	ϱ^2 Sagittarii	5½	+51	—12	10 23.7	—10 1 40	+0.4442	.5954	+.1058	—9.5028	.9768
3	B.A.C. 6658	6	+72	+ 9	12 53.8	— 7 37 23	+0.7878	.5954	+.1107	—9.5044	.9766
3	e^1 Sagittarii	5½	— 9	—85	17 59.8	— 2 43 16	—0.6476	.5950	+.1209	—9.4559	.9815
3	e^2 Sagittarii	5	—13	—90	18 43.3	— 2 1 29	—0.7211	.5950	+.1209	—9.4518	.9819
4	*g* Sagittarii	5½	0	—71	0 56.0	+ 3 56 48	—0.5087	.5942	+.1344	—9.4364	.9832
4	B.A.C. 6992	6½	+39	—27	10 8.8	—11 11 49	+0.1732	.5932	+.1509	—9.4189	.9845
4	β Capricor.	3	+40	—26	10 14.5	—11 6 21	+0.1853	.5931	+.1510	—9.4188	.9845
4	B.A.C. 7221	6½	+31	—37	22 19.7	+ 0 30 59	—0.0056	.5909	+.1704	—9.3536	.9886
4	B.A.C. 7242	6	—12	—90	23 19.5	+ 1 28 31	—0.7820	.5905	+.1719	—9.3208	.9903
5	8 Aquarii	6	+77	+37	2 5.5	+ 4 8 12	+1.1698	.5901	+.1760	—9.3706	.9877
5	ν Aquarii	4½	+47	—23	6 4.5	+ 7 58 6	+0.2489	.5891	+.1814	—9.3150	.9905
5	17 Aquarii	6	— 6	—90	10 36.0	—11 42 58	—0.7198	.5879	+.1885	—9.2351	.9935
5	19 Aquarii	6	+27	—44	12 31.8	— 9 49 17	—0.1230	.5876	+.1896	—9.2535	.9929
5	ξ Aquarii	4½	—20	—90	17 43.7	— 4 49 5	—0.9550	.5867	+.1952	—9.1677	.9952
9	δ Piscium	4½	+90	+23	2 52.3	+ 1 21 45	+1.0060	.5740	+.1984	+9.0762	.9969
9	π Piscium	6	+54	—16	23 43.7	— 2 31 44	+0.2939	.5732	+.1751	+9.2976	.9913
10	29 Arietis	6½	+90	+34	23 46.8	— 3 20 13	+1.0590	.5720	+.1394	+9.3965	.9861
11	π Arietis	5½	+ 6	—61	6 39.5	+ 3 17 21	—0.5422	.5715	+.1275	+9.4633	.9808
11	ϱ^1 Arietis	7½	+ 7	—60	9 15.3	+ 5 47 55	—0.5330	.5715	+.1235	+9.4704	.9802
11	ϱ^2 Arietis	6	—32	—73	9 37.8	+ 6 9 41	—1.1056	.5712	+.1226	+9.4848	.9787
11	ϱ^3 Arietis	6	— 7	—73	9 53.3	+ 6 24 33	—0.7637	.5712	+.1223	+9.4776	.9795
11	53 Arietis	6	+33	—30	14 40.2	+11 1 14	—0.0693	.5710	+.1137	+9.4746	.9798
11	54 Arietis	6½	—22	—72	15 2.9	+11 23 11	—0.9804	.5708	+.1132	+9.4963	.9775
12	B.A.C. 1096	6½	+90	+42	2 15.1	— 1 48 33	+1.0972	.5696	+.0926	+9.4753	.9797
12	13 Tauri	6½	+ 5	—58	5 47.1	+ 1 35 55	—0.5567	.5693	+.0858	+9.5184	.9750
12	ω^1 Tauri	6	+58	— 3	17 30.8	—11 5 14	+0.3348	.5673	+.0632	+9.5180	.9750
12	ω^2 Tauri	5½	+ 8	—52	21 3.3	— 7 40 12	—0.5062	.5666	+.0566	+9.5390	.9723
12	53 Tauri	6½	—30	—69	21 59.4	— 6 46 0	—1.0593	.5664	+.0547	+9.5506	.9707
13	ε Tauri	3½	+90	+58	2 4.6	— 2 49 26	+1.2042	.5656	+.0469	+9.5099	.9760
13	ι Tauri	5	—25	—69	17 19.6	+11 53 47	—0.9968	.5620	+.0174	+9.5620	.9690
13	B.A.C. 1563	6½	+90	+37	18 28.2	—10 59 59	+0.9302	.5613	+.0148	+9.5260	.9740
13	*l* Tauri	5½	+54	— 1	19 28.5	—10 1 48	+0.2787	.5611	+.0129	+9.5389	.9723
13	105 Tauri	6	—35	—69	19 29.4	—10 0 55	—1.1051	.5611	+.0128	+9.5645	.9686
14	B.A.C. 1651	6½	+90	+38	1 23.5	— 4 18 55	+0.9309	.5594	+.0015	+9.5271	.9739
14	B.A.C. 1733	6½	+46	— 7	7 7.1	+ 1 12 59	+0.1551	.5576	—.0089	+9.5418	.9720
14	ζ Tauri	3½	+ 2	—56	8 55.1	+ 2 57 18	—0.6038	.5572	—.0123	+9.5554	.9700
14	B.A.C. 1835	6½	+12	—43	13 49.2	+ 7 41 26	—0.4297	.5554	—.0215	+9.5507	.9707
14	χ^1 Orionis	4½	+44	—11	16 36.3	+10 22 54	+0.1230	.5544	—.0267	+9.5392	.9723
14	χ^2 Orionis	6	+90	+20	16 51.9	+10 38 1	+0.6894	.5542	—.0270	+9.5282	.9738
14	χ^3 Orionis	5	+81	+15	20 47.2	— 9 34 33	+0.6048	.5530	—.0341	+9.5275	.9739
14	χ^4 Orionis	5	+43	—12	20 59.3	— 9 22 53	+0.1087	.5530	—.0344	+9.5369	.9726
15	68 Orionis	6	+56	— 2	0 45.0	— 5 44 40	+0.3166	.5528	—.0412	+9.5302	.9735
15	71 Orionis	5½	+90	+34	2 5.2	— 4 27 8	+0.9354	0.5512	—.0434	+9.5170	9.9751

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Mar. 15	15 Geminor.	6	—43	—69	8 4.4	+ 1 20 16	—1.1825	0.5490	—.0538	+9.5518	9.9705
15	16 Geminor.	6	—14	—70	8 9.7	+ 1 25 20	—0.8636	.5490	—.0539	+9.5458	.9714
15	ν Geminor.	4½	+ 3	—58	8 38.7	+ 1 53 23	—0.5848	.5489	—.0550	+9.5401	.9722
16	B.A.C. 2432	6½	+ 1	—65	10 34.9	+ 2 59 33	—0.6214	.5390	—.0962	+9.5022	.9769
16	*f* Geminor.	6	—12	—72	18 37.8	+10 47 21	—0.8356	.5363	—.1077	+9.4895	.9782
17	1 Cancri	6	+48	—17	3 22.2	— 4 44 25	+0.1958	.5324	—.1194	+9.4443	.9825
17	5 Cancri	6	—11	—73	5 35.4	— 2 35 18	—0.8213	.5320	—.1223	+9.4617	.9810
17	29 Cancri	6	+25	—42	19 21.9	+10 46 9	—0.2175	.5278	—.1389	+9.4031	.9856
17	B.A.C. 2872	6½	+66	— 6	22 0.3	—10 40 16	+0.4526	.5272	—.1416	+9.3750	.9874
18	A^1 Cancri	6	+59	—11	2 51.8	— 5 57 26	+0.3667	.5258	—.1469	+9.3573	.9884
18	A^2 Cancri	6	+90	+ 8	4 48.0	— 4 4 42	+0.7023	.5254	—.1490	+9.3387	.9894
18	60 Cancri	6	+60	— 4	9 27.0	+ 0 26 7	+0.5126	.5241	—.1536	+9.3228	.9902
18	α Cancri	4	+39	—29	10 46.1	+ 1 42 53	+0.0446	.5237	—.1548	+9.3312	.9898
18	κ Cancri	5	+76	— 1	15 36.7	+ 6 24 52	+0.5814	.5228	—.1594	+9.2887	.9916
18	B.A.C. 3122	6½	+ 4	—70	16 39.0	+ 7 25 23	—0.5871	.5225	—.1604	+9.3218	.9902
19	ω Leonis	6	+72	— 4	2 28.6	— 7 2 16	+0.5391	.5204	—.1685	+9.2240	.9938
19	*h* Leonis	6	+ 9	—64	4 18.7	— 5 15 22	—0.5112	.5204	—.1698	+9.2528	.9929
19	π Leonis	5	—61	—82	19 17.1	+ 9 17 14	—1.3372	.5183	—.1799	+9.1793	.9950
19	14 Sextantis	6	+90	+ 4	22 48.9	—11 17 4	+0.7088	.5180	—.1819	+9.0381	.9974
20	16 Sextantis	6	+28	—44	0 6.8	—10 1 25	—0.1527	.5178	—.1826	+9.0754	.9969
20	34 Sextantis	6	0	—83	17 55.9	+ 7 17 7	—0.6621	.5175	—.1901	+8.8736	.9988
20	36 Sextantis	6	+53	—21	19 17.3	+ 8 36 14	+0.2839	.5175	—.1905	+8.7464	.9993
20	B.A.C. 3726	6	+90	+35	23 3.9	—11 43 39	+1.1673	.5176	—.1915	+8.4831	.9998
21	55 Leonis	6	+90	+31	0 54.8	— 9 55 55	+1.1285	.5178	—.1920	+8.4053	9.9999
21	p^2 Leonis	6	+90	+30	5 8.2	— 5 49 47	+1.1212	.5182	—.1928	+8.1026	0.0000
21	p^5 Leonis	5	+45	—29	10 31.8	— 0 35 30	+0.1455	.5188	—.1936	+8.0644	0.0000
23	χ Virginis	5	+51	—22	7 7.3	— 5 19 1	+0.2666	.5293	—.1851	—9.1012	9.9965
23	B.A.C. 4259	6	+52	—21	7 11.4	— 5 14 6	+0.2948	.5293	—.1850	—9.1033	.9965
23	28 Virginis	6	+ 7	—71	8 29.9	— 3 57 59	—0.5259	.5298	—.1843	—9.0706	.9970
23	ψ Virginis	5	+70	— 6	14 45.5	+ 2 6 19	+0.5568	.5321	—.1807	—9.1850	.9949
23	*g* Virginis	6	+78	0	21 31.9	+ 8 40 24	+0.6608	.5347	—.1762	—9.2404	.9933
23	B.A.C. 4394	5½	—55	—90	21 52.2	+ 9 0 2	—1.3011	.5348	—.1760	—9.1573	.9955
23	50 Virginis	6	+37	—34	22 27.8	+ 9 34 32	+0.0541	.5353	—.1754	—9.2225	.9939
24	58 Virginis	6	+13	—59	2 17.2	—10 43 7	—0.3664	.5368	—.1727	—9.2325	.9936
24	α Virginis	1	+14	—58	6 5.5	— 7 1 55	—0.3464	.5383	—.1695	—9.2588	.9927
24	ι Virginis	5	+78	+39	6 50.1	— 6 18 39	+1.1992	.5386	—.1689	—9.3179	.9904
24	B.A.C. 4531	6	+78	+31	10 43.0	— 2 33 3	+1.1069	.5404	—.1654	—9.3360	.9886
24	86 Virginis	6	— 2	—80	16 11.0	+ 2 44 38	—0.6160	.5430	—.1603	—9.3088	.9908
25	B.A.C. 4679	6½	+76	+ 6	1 1.2	+11 17 50	+0.7732	.5471	—.1508	—9.3933	.9863
25	5 Libræ	6	—68	—90	20 22.8	+ 6 1 14	—1.3029	.5568	—.1256	—9.4098	.9852
25	8 Libræ	6	—30	—90	22 32.2	+ 8 6 18	—0.9892	.5578	—.1225	—9.4251	.9841
25	α^2 Libræ	2½	—27	—90	22 37.3	+ 8 11 18	—0.9521	.5578	—.1224	—9.4263	.9840
25	B.A.C. 4896	6	+73	+14	22 54.3	+ 8 27 43	+0.8738	.5581	—.1221	—9.4715	.9801
26	ν^2 Libræ	6½	—64	—90	5 50.3	— 8 50 26	—1.2832	.5614	—.1115	—9.4393	.9830
26	28 Libræ	6	+17	—45	12 6.4	— 2 47 14	—0.1402	.5643	—.1015	—9.4821	.9790
26	B.A.C. 5109	6½	+71	+23	17 16.2	+ 2 11 43	+0.9888	.5666	—.0929	—9.5172	.9751
26	41 Libræ	6	+45	—16	20 2.7	+ 4 52 25	+0.3641	.5682	—.0879	—9.5093	.9761
26	κ Libræ	5	+66	+ 1	21 22.7	+ 6 9 39	+0.6543	.5688	—.0853	—9.5177	.9751
27	JUPITER		— 1	—65	0 24.1	+ 9 4 39	—0.4338	.5723	—.0804	—9.5002	.9771
27	λ Libræ	6	+70	+10	2 20.3	+10 56 42	+0.8015	.5727	—.0767	—9.5290	.9737
27	β^1 Scorpii	2	+26	—32	7 35.2	— 7 59 39	+0.0800	.5731	—.0666	—9.5220	.9745
27	β^2 Scorpii	5½	+26	—32	7 35.4	— 7 59 27	+0.0765	.5731	—.0666	—9.5219	.9745
27	ω^1 Scorpii	4½	+70	+21	8 9.5	— 7 26 30	+0.9530	.5733	—.0658	—9.5401	.9722
27	ω^2 Scorpii	4½	+70	+38	8 24.5	— 7 12 5	+1.1474	.5736	—.0649	—9.5443	.9716
27	ν^1 Scorpii	7	— 4	—66	10 24.7	— 5 16 12	—0.4533	0.5742	—.0611	—9.5147	9.9754

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Mar. 27	ν^2 Scorpii	4	— 3	—66	10 25.1	— 5 15 47	—0.4435	0.5742	—.0611	—9.5149	9.9754
27	ψ Ophiuchi	5	+15	—42	15 35.4	— 0 16 42	—0.0927	.5762	—.0510	—9.5281	.9738
27	ω Ophiuchi	5	+60	+61	18 58.4	+ 2 58 57	+1.2691	.5773	—.0444	—9.5577	.9697
28	B A.C. 5663	6½	+13	—41	3 59.7	+11 40 23	—0.0805	.5804	—.0261	—9.5380	.9725
28	B.A.C. 5700	6½	—43	—90	5 32.7	—10 50 4	—1.0198	.5808	—.0226	—9.5197	.9748
28	B.A.C. 5758	6	+69	+29	9 19.4	— 7 11 43	+1.0426	.5817	—.0151	—9.5616	.9691
28	ξ Ophiuchi	5	+52	— 4	15 29.7	— 1 15 13	+0.5649	.5833	—.0016	—9.5536	.9702
28	B.A.C. 5866	6	+69	+19	17 2.3	+ 0 13 55	+0.9249	.5837	+.0014	—9.5604	.9692
29	B.A.C. 6081	6½	+27	—28	7 40.6	— 9 40 40	+0.1570	.5861	+.0331	—9.5408	.9721
29	B.A.C. 6098	6	+59	— 1	8 44.8	— 8 38 52	+0.6126	.5861	+.0353	—9.5490	.9709
29	μ^1 Sagittarii	4	+69	+41	13 19.8	— 4 14 16	+1.1623	.5865	+.0449	—9.5561	.9699
29	15 Sagittarii	5	+69	+14	13 56.1	— 3 39 19	+0.8551	.5867	+.0464	—9.5497	.9708
29	16 Sagittarii	6	+51	— 8	13 56.8	— 3 38 38	+0.5058	.5867	+.0464	—9.5428	.9718
29	21 Sagittarii	5	+70	+18	18 6.8	+ 0 21 53	+0.9074	.5865	+.0552	—9.5466	.9713
29	B.A.C. 6287	6	—25	—90	20 8.9	+ 2 19 25	—0.8217	.5864	+.0594	—9.5085	.9761
29	B A.C. 6292	6	—13	—81	20 37.0	+ 2 46 26	—0.6080	.5864	+.0608	—9.5125	.9757
29	B.A.C. 6293	6½	—65	—90	20 39.6	+ 2 48 56	—1.2601	.5864	+.0608	—9.4982	.9773
29	B.A.C. 6294	6	—47	—90	20 40.2	+ 2 49 31	—1.1158	.5864	+.0609	—9.5013	.9770
29	B.A C. 6299	7	+ 1	—60	20 50.4	+ 2 59 16	—0.3621	.5868	+.0611	—9.5174	.9751
29	B.A.C. 6301	7	— 7	—71	21 5.2	+ 3 13 34	—0.5032	.5868	+.0615	—9.5141	.9755
30	B.A.C. 6536	6½	+71	+30	11 49.3	— 6 35 45	+1.0718	.5864	+.0920	—9.5235	.9743
30	*d* Sagittarii	5	+71	+35	15 41.4	— 2 52 24	+1.1267	.5860	+.0998	—9.5168	.9752
30	ρ^1 Sagittarii	4	+35	—26	17 23.0	— 1 14 38	+0.1883	.5860	+.1032	—9.4923	.9780
30	ρ^2 Sagittarii	5½	+68	+ 1	17 26.2	— 1 11 30	+0.6583	.5860	+.1033	—9.5028	.9768
30	B.A.C. 6658	6	+72	+24	20 1.3	+ 1 17 44	+1.0051	.5857	+.1079	—9.5044	.9766
31	e^1 Sagittarii	5½	+ 2	—66	1 17.7	+ 6 22 17	—0.4570	.5851	+.1178	—9.4559	.9815
31	e^2 Sagittarii	5	— 3	—73	2 2.7	+ 7 5 34	—0.5327	.5849	+.1193	—9.4517	.9819
31	B.A.C. 6746	6	—44	—90	2 29.0	+ 7 30 51	—1.1442	.5848	+.1203	—9.4346	.9833
31	*q* Sagittarii	5½	+10	—56	8 28.4	—10 43 11	—0.3232	.5840	+.1311	—9.4363	.9832
31	B.A.C. 6992	6½	+51	—17	18 0.8	— 1 32 4	+0.3591	.5822	+.1470	—9.4188	.9845
31	β Capricor.	3	+51	—16	18 6.7	— 1 26 23	+0.3711	.5822	+.1471	—9.4187	.9845
Apr. 1	B.A.C. 7221	6½	+40	—27	6 38.0	+10 37 5	+0.1607	.5800	+.1661	—9.3535	.9886
1	B.A C. 7242	6	— 3	—82	7 39.9	+11 36 44	—0.6299	.5798	+.1675	—9.3208	.9903
1	ν Aquarii	4½	+57	—14	14 39.3	— 5 39 19	+0.4072	.5788	+.1767	—9.3149	.9905
1	17 Aquarii	6	+ 1	—77	20 22.3	— 0 8 46	—0.5859	.5777	+.1836	—9.2351	.9935
1	19 Aquarii	6	+34	—35	21 20.0	+ 0 46 48	+0.0187	.5776	+.1844	—9.2534	.9929
2	ξ Aquarii	4½	—13	—90	2 42.4	+ 5 59 33	—0.8354	.5768	+.1902	—9.1677	.9952
2	c^1 Capricor.	6	+81	+21	5 48.2	+ 8 56 36	+0.9993	.5761	+.1932	—9.2267	.9937
2	30 Aquarii	5½	+37	—35	13 40.9	— 7 27 49	+0.0275	.5750	+.1999	— 9.0967	.9966
2	44 Aquarii	6	+43	—30	19 39.5	— 1 42 4	+0.1264	.5744	+.2041	—9.0238	.9976
2	51 Aquarii	6	+48	—25	22 41.3	+ 1 13 10	+0.2087	.5740	+.2059	—8.9833	.9980
3	κ Aquarii	5	+85	+10	4 36.1	+ 6 55 14	+0.8424	.5736	+.2089	—8.9340	9.9984
4	B.A.C. 8152	6½	+78	— 4	0 29.1	+ 2 5 40	+0.6010	.5728	+.2130	—7.9000	0.0000
4	κ Piscium	4½	+34	—39	1 58.0	+ 3 31 24	—0.0464	.5728	+.2129	+7.9515	.0000
4	9 Piscium	6	+43	—30	2 6.3	+ 3 39 23	+0.1180	.5728	+.2129	+7.8181	.0000
4	15 Piscium	6½	+88	+ 2	5 41.3	+ 7 6 46	+0.6960	.5727	+.2125	+7.9918	0.0000
4	16 Piscium	6	+36	—36	6 5.4	+ 7 30 2	—0.0022	.5727	+.2125	+8.3718	9.9999
4	λ Piscium	5	+90	+10	8 32.9	+ 9 52 18	+0.8348	.5727	+.2119	+8.2559	.9999
7	π Arietis	5½	— 1	—70	16 54.9	— 8 39 9	—0.6636	.5781	+.1276	+9.4633	.9808
7	ρ^1 Arietis	7½	— 1	—70	19 18.1	— 6 21 9	—0.6575	.5781	+.1236	+9.4704	.9802
7	ρ^2 Arietis	6	—46	—73	19 40.3	— 5 59 47	—1.2269	.5781	+.1227	+9.4848	.9787
7	ρ^3 Arietis	6	—15	—73	19 55.4	— 5 45 10	—0.8876	.5782	+.1224	+9.4776	.9775
8	53 Arietis	6	+25	—38	0 37.1	— 1 13 45	—0.2039	.5781	+.1138	+9.4746	.9778
8	54 Arietis	6½	—33	—72	0 59.4	— 0 52 13	—1.1087	.5778	+.1132	+9.4963	.9775
8	B.A.C. 1096	6½	+90	+30	11 58.3	+ 9 42 39	+0.9395	0.5773	+.0927	+9.4753	9.9797

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Apr. 8	13 Tauri	6½	— 4	—70	15 25.8	—10 57 21	—0.7045	0.5768	+.0858	+9.5184	9.9750
9	ω^1 Tauri	6	+46	—12	2 54.2	+ 0 6 10	+0.1678	.5753	+.0635	+9.5180	.9750
9	ω^2 Tauri	5½	— 2	—65	6 21.9	+ 3 26 26	—0.6685	.5745	+.0563	+9.5390	.9723
9	53 Tauri	6½	—48	—69	7 16.9	+ 4 19 24	—1.2170	.5743	+.0549	+9.5506	.9707
9	B.A.C. 1361	6	+90	+47	9 42.0	+ 6 39 17	+1.1015	.5738	+.0498	+9.5066	.9764
9	s Tauri	3½	+90	+40	11 16.5	+ 8 10 25	+1.0219	.5736	+.0469	+9.5099	.9760
10	ι Tauri	5	—42	—69	2 11.0	— 1 26 52	—1.1673	.5694	+.0171	+9.5620	.9690
10	l Tauri	5½	+42	—11	4 21.5	+ 0 38 57	+0.0946	.5687	+.0129	+9.5389	.9723
10	B.A.C. 1651	6½	+90	+26	10 4.5	+ 6 9 54	+0.7366	.5668	+.0015	+9.5271	.9739
10	B.A.C. 1733	6½	+34	—18	15 40.7	+11 34 24	—0.0343	.5647	—.0095	+9.5418	.9720
10	ζ Tauri	3½	—10	—69	17 26.6	—10 43 21	—0.7867	.5638	—.0130	+9.5554	.9700
10	B.A.C. 1835	6½	+ 1	—58	22 14.7	— 6 5 10	—0.6160	5620	—.0218	+9.5507	.9707
11	χ^1 Orionis	4½	+32	—22	0 58.6	— 3 26 58	—0.0694	5608	—.0270	+9.5392	.9723
11	χ^2 Orionis	6	+70	+ 9	1 13.9	— 3 12 9	+0.4918	.5608	—.0273	+9.5282	.9738
11	χ^3 Orionis	5	+63	+ 4	5 4.7	+ 0 30 47	+0.4069	.5591	—.0345	+9.5275	.9739
11	χ^4 Orionis	5	+31	—23	5 16.5	+ 0 42 13	—0.0848	.5591	—.0348	+9.5369	.9726
11	68 Orionis	6	+44	—13	8 58.1	+ 4 16 16	+0.1206	.5574	—.0416	+9.5302	.9735
11	71 Orionis	5½	+90	+21	10 16.9	+ 5 32 25	+0.7335	.5571	—.0438	+9.5170	.9751
11	16 Geminor.	6	—29	—70	16 15.1	+11 18 32	—1.0510	.5542	—.0544	+9.5468	.9714
11	ν Geminor.	4½	— 9	—70	16 43.6	+11 46 7	—0.7743	.5539	—.0554	+9.5401	.9722
12	B.A.C. 2432	6½	—11	—72	18 18.4	—11 29 14	—0.8100	.5421	—.0947	+9.5022	.9769
13	f Geminor.	6	—25	—72	2 16.5	— 3 46 16	—1.0219	.5385	—.1075	+9.4895	.9782
13	1 Cancri	6	+37	—27	10 56.6	+ 4 37 36	+0.0069	.5347	—.1191	+9.4443	.9825
13	5 Cancri	6	—24	—73	13 9.9	+ 6 46 47	—1.0069	.5338	—.1219	+9.4617	.9810
14	29 Cancri	6	+14	—53	2 50.9	— 3 57 14	—0.3966	.5283	—.1382	+9.4031	.9856
14	B.A.C. 2872	6½	+53	—15	5 28.6	— 1 24 13	+0.2723	.5274	—.1411	+9.3750	.9874
14	A^1 Cancri	6	+48	—20	10 19.3	+ 3 17 44	+0.1897	.5258	—.1460	+9.3574	.9884
14	A^2 Cancri	6	+72	— 2	12 15.2	+ 5 10 10	+0.5254	.5252	—.1480	+9.3387	.9894
14	60 Cancri	6	+57	—13	16 53.7	+ 9 40 25	+0.3402	.5238	—.1526	+9.3228	.9902
14	α Cancri	4	+29	—39	18 12.7	+10 57 4	—0.1254	.5234	—.1537	+9.3312	.9898
14	κ Cancri	5	+62	—10	23 2.8	— 8 21 18	+0.4138	.5222	—.1582	+9.2887	.9916
15	B.A.C. 3122	6½	— 6	—75	0 5.1	— 7 20 50	—0.7508	.5217	—.1591	+9.3218	.9902
15	ω Leonis	6	+60	—13	9 54.6	+ 2 11 25	+0.3814	.5194	—.1671	+9.2240	.9938
15	h Leonis	6	0	—78	11 44.7	+ 3 58 24	—0.6651	.5190	—.1685	+9.2528	.9929
16	14 Sextantis	6	+75	— 4	6 16.2	— 2 2 6	+0.5720	.5165	—.1802	+9.0381	.9974
16	16 Sextantis	6	+21	—52	7 34.2	— 0 46 21	—0.2865	.5164	—.1810	+9.0754	.9969
17	34 Sextantis	6	— 6	—72	1 24.7	— 7 26 24	—0.7736	.5163	—.1884	+8.8736	.9988
17	36 Sextantis	6	+46	—27	2 46.2	— 6 7 12	+0.1710	.5164	—.1888	+8.7670	.9993
17	B.A.C. 3726	6	+90	+26	6 32.9	— 2 26 58	+1.0595	.5166	—.1899	+8.6738	.9998
17	55 Leonis	6	+90	+23	8 23.9	— 0 39 10	+1.0231	.5168	—.1903	+8.6194	9.9999
17	p^2 Leonis	6	+90	+23	12 37.3	+ 3 27 2	+1.0212	.5172	—.1912	+8.4602	0.0000
17	p^5 Leonis	5	+39	—33	18 0.9	+ 8 41 17	+0.0544	.5181	—.1920	+8.0644	0.0000
19	χ Virginis	5	+49	—23	14 26.6	+ 3 48 55	+0.2368	.5311	—.1842	—9.1012	9.9965
19	B.A.C. 4259	6	+50	—22	14 30.6	+ 3 52 48	+0.2649	.5312	—.1842	—9.1033	.9965
19	28 Virginis	6	+ 5	—73	15 48.5	+ 5 8 21	—0.5505	.5316	—.1836	—9.0706	.9970
19	ψ Virginis	5	+68	— 7	22 1.0	+11 9 32	+0.5360	.5343	—.1802	—9.1850	.9949
20	g Virginis	6	+77	— 1	4 43.6	— 6 20 17	+0.6488	.5376	—.1758	—9.2404	.9933
20	B.A.C. 1394	5½	—56	—90	5 3.7	— 6 0 48	—1.3035	.5376	—.1756	—9.1574	.9955
20	50 Virginis	6	+36	—34	5 38.9	— 5 26 40	+0.0460	.5379	—.1751	—9.2225	.9939
20	58 Virginis	6	+13	—59	9 25.9	— 1 46 44	—0.3674	.5400	—.1722	—9.2325	.9936
20	α Virginis	1	+14	—57	13 11.7	+ 1 51 53	—0.3423	.5416	—.1693	—9.2588	.9927
20	i Virginis	5	+78	+39	13 55.8	+ 2 34 37	+1.1959	.5422	—.1687	—9.3180	.9904
20	B.A.C. 4531	6	+78	+31	17 45.9	+ 6 17 25	+1.1087	.5441	—.1652	—9.3361	.9896
20	86 Virginis	6	— 1	—78	23 9.7	+11 30 56	—0.5972	.5469	—.1601	—9.3089	.9908
21	B.A.C. 4679	6½	+76	+ 9	7 52.6	— 4 3 8	+0.7941	0.5518	—.1508	—9.3933	9.9863

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Apr. 22	5 Libræ	6	—55	—90	2 56.4	— 9 37 35	—1.2468	0.5623	—.1259	—9.4098	9.9852
22	8 Libræ	6	—26	—90	5 3.7	— 7 34 37	—0.9333	.5632	—.1229	—9.4251	.9841
22	α^2 Libræ	2½	—24	—90	5 8.8	— 7 29 43	—0.8962	.5634	—.1226	—9.4263	.9840
22	B.A.C. 4896	6	+73	+17	5 25.6	— 7 13 33	+0.9179	.5638	—.1221	—9.4715	.9801
22	ν^2 Libræ	6½	—53	—90	12 14.3	— 0 38 57	—1.2173	.5669	—.1118	—9.4393	.9830
22	28 Libræ	6	+23	—39	18 24.2	+ 5 17 58	—0.0407	.5706	—.1013	—9.4821	.9790
22	B.A.C. 5109	6½	+71	+28	23 28.8	+10 11 50	+1.0503	.5729	—.0926	—9.5172	.9751
23	41 Libræ	6	+49	—12	2 12.5	—11 10 15	+0.4320	.5740	—.0880	—9.5094	.9761
23	JUPITER		— 9	—80	2 30.8	—10 43 59	—0.5987	.5793	—.0883	—9.4878	.9785
23	κ Libræ	5	+71	+ 5	3 31.7	— 9 53 54	+0.7208	.5746	—.0853	—9.5177	.9751
23	λ Libræ	6	+70	+15	8 24.5	— 5 11 40	+0.8710	.5768	—.0762	—9.5290	.9737
23	β^1 Scorpii	2	+30	—27	13 34.4	— 0 12 59	+0.1583	.5790	—.0664	—9.5220	.9745
23	β^2 Scorpii	5½	+30	—28	13 34.6	— 0 12 48	+0.1551	.5790	—.0664	—9.5219	.9745
23	ω^1 Scorpii	4½	+70	+27	14 8.3	+ 0 19 37	+1.0268	.5790	—.0656	—9.5401	.9722
23	ω^2 Scorpii	4½	+70	+48	14 23.0	+ 0 33 49	+1.2204	.5794	—.0648	—9.5443	.9716
23	ν^1 Scorpii	7	+ 1	—60	16 21.3	+ 2 27 51	—0.3698	.5798	—.0613	—9.5147	.9754
23	ν^2 Scorpii	4	+ 1	—59	16 21.8	+ 2 28 15	—0.3602	.5798	—.0613	—9.5149	.9754
23	ψ Ophiuchi	5	+19	—37	21 27.5	+ 7 22 46	—0.0076	.5821	—.0507	—9.5281	.9738
24	B.A.C. 5663	6½	+18	—36	9 41.7	— 4 50 16	+0.0124	.5855	—.0255	—9.5380	.9725
24	B.A.C. 5700	6½	—36	—90	11 13.5	— 3 21 52	—0.9219	.5856	—.0225	—9.5197	.9748
24	B.A.C. 5758	6	+69	+38	14 57.6	+ 0 13 50	+1.1337	.5864	—.0144	—9.5616	.9691
24	ξ Ophiuchi	5	+61	+ 2	21 4.0	+ 6 6 27	+0.6614	.5875	—.0013	—9.5536	.9702
24	B.A.C. 5866	6	+69	+27	22 35.7	+ 7 34 41	+1.0212	.5878	+.0022	—9.5604	.9692
25	B.A.C. 6081	6½	+33	—21	13 7.5	— 2 26 27	+0.2618	.5887	+.0334	—9.5408	.9721
25	B.A.C. 6098	6	+69	+ 5	14 11.4	— 1 24 59	+0.7175	.5887	+.0356	—9.5490	.9709
25	μ^1 Sagittarii	4	+69	+61	18 45.2	+ 2 58 30	+1.2682	.5884	+.0456	—9.5561	.9699
25	15 Sagittarii	5	+69	+22	19 21.5	+ 3 33 21	+0.9618	.5883	+.0466	—9.5497	.9708
25	16 Sagittarii	6	+60	— 1	19 22.2	+ 3 34 2	+0.6125	.5883	+.0472	—9.5428	.9718
25	21 Sagittarii	5	+70	+26	23 31.5	+ 7 33 56	+1.0153	.5880	+.0559	—9.5466	.9713
26	B.A.C. 6287	6	—19	—90	1 33.5	+ 9 31 16	—0.7135	.5880	+.0602	—9.5065	.9761
26	B A.C. 6292	6	— 6	—70	2 1.6	+ 9 58 19	—0.4998	.5880	+.0609	—9.5125	.9757
26	B.A.C. 6293	6½	—51	—90	2 4.1	+10 0 47	—1.1524	.5880	+.0609	—9.4982	.9773
26	B.A.C. 6294	6	—38	—90	2 4.7	+10 1 22	—1.0081	.5880	+.0610	—9.5013	.9770
26	B.A.C. 6299	7	+ 7	—52	2 14.9	+10 11 10	—0.2536	.5879	+.0613	—9.5174	.9751
26	B.A.C. 6301	7	— 1	—62	2 29.7	+10 25 24	—0.3947	.5879	+.0621	—9.5141	.9755
26	B.A.C. 6536	6½	+71	+42	17 15.6	+ 0 37 53	+1.1860	.5856	+.0918	—9.5235	.9743
26	*d* Sagittarii	5	+71	+51	21 9.0	+ 4 22 32	+1.2422	.5851	+.0993	—9.5168	.9752
26	ϱ^1 Sagittarii	4	+42	—20	22 51.2	+ 6 0 59	+0.3003	.5844	+.1027	—9.4922	.9780
26	ϱ^2 Sagittarii	5½	+72	— 2	22 54.5	+ 6 4 7	+0.7720	.5844	+.1028	—9.5027	.9768
27	B.A.C. 6658	6	+72	+35	1 30.7	+ 8 34 29	+1.1210	.5837	+.1078	—9.5043	.9766
27	e^1 Sagittarii	5½	+ 6	—58	6 50.0	—10 18 8	—0.3481	.5825	+.1174	—9.4558	.9815
27	e^2 Sagittarii	5	+ 3	—64	7 35.4	— 9 34 24	—0.4242	.5822	+.1189	—9.4517	.9819
27	B.A.C. 6746	6	—35	—90	8 1.9	— 9 8 51	—1.0392	.5822	+.1195	—9.4345	.9833
27	*q* Sagittarii	5½	+16	—49	14 5.5	— 3 18 42	—0.2144	.5806	+.1300	—9.4363	.9832
27	B.A.C. 6902	6½	+58	—10	23 46.2	+ 6 0 42	+0.4713	.5777	+.1457	—9.4188	.9845
27	β Capricor.	3	+59	—10	23 52.2	+ 6 6 28	+0.4834	.5777	+.1458	—9.4187	.9845
28	B.A.C. 7221	6½	+47	—22	12 37.3	— 5 36 14	+0.2682	.5741	+.1641	—9.3535	.9866
28	B.A.C. 7242	6	+ 3	—72	13 40.5	— 4 35 16	—0.5306	.5740	+.1655	—9.3208	.9903
28	ν Aquarii	4½	+64	— 8	20 49.0	+ 2 17 56	+0.5146	.5719	+.1742	—9.3149	.9915
29	17 Aquarii	6	+ 6	—68	2 40.2	+ 7 56 37	—0.4922	.5704	+.1807	—9.2351	.9935
29	19 Aquarii	6	+40	—30	3 39.3	+ 8 53 37	+0.1189	.5702	+.1817	—9.2534	.9929
29	ξ Aquarii	4½	— 7	—90	9 10.0	— 9 47 26	—0.7480	.5690	+.1870	—9.1677	.9952
29	c^1 Capricor.	6	+81	+30	12 20.6	— 6 43 29	+1.1076	.5683	+.1898	—9.2267	.9937
29	30 Aquarii	5½	+42	—30	20 26.3	+ 1 5 6	+0.1188	.5666	+.1963	—9.0966	.9966
30	44 Aquarii	6	+48	—25	2 35.2	+ 7 1 9	+0.2151	0.5657	+.2003	—9.0237	9.9976

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Apr. 30	51 Aquarii	6	+53	−20	5 42.2	+10 1 41	+0.2964	0.5652	+.2021	−8.9832	9.9980
30	κ Aquarii	5	+85	+17	11 47.5	− 8 5 44	+0.9348	.5646	+.2049	−8.9339	9.9984
May 1	B.A.C. 8152	6½	+85	0	8 16.2	+11 40 29	+0.6737	.5638	+.2088	−7.8992	0.0000
1	κ Piscium	4½	+37	−35	9 47.8	−10 51 5	+0.0164	.5638	+.2087	+7.9520	.0000
1	9 Piscium	6	+47	−26	9 56.3	−10 42 51	+0.1828	.5638	+.2087	+7.8190	.0000
1	15 Piscium	6½	+90	+ 6	13 37.6	− 7 9 9	+0.7654	.5639	+.2084	+7.9924	0.0000
1	16 Piscium	6	+40	−33	14 2.5	− 6 45 10	+0.0576	.5639	+.2083	+8.3720	9.9999
1	λ Piscium	5	+90	+15	16 34.3	− 4 18 38	+0.9034	.5640	+.2079	+8.2562	.9999
1	19 Piscium	6	+14	−62	18 30.7	− 2 26 16	−0.4112	.5640	+.2075	+8.6786	.9995
1	B.A.C. 8276	6½	+90	+29	19 34.9	− 1 24 17	+1.0955	.5643	+.2072	+8.4068	.9999
1	22 Piscium	6	+84	0	20 59.7	− 0 2 23	+0.6671	.5645	+.2069	+8.5796	.9997
2	45 Piscium	6	−28	−83	12 0.6	− 9 32 41	−1.0854	.5661	+.2004	+9.0822	.9968
2	51 Piscium	6½	+51	−21	14 59.0	− 6 39 28	+0.2503	.5666	+.1986	+9.0339	.9975
2	62 Piscium	6	+90	+49	22 0.6	+ 0 6 23	+1.2720	.5677	+.1936	+9.0578	.9972
2	δ Piscium	4½	+90	+24	22 1.0	+ 0 6 26	+1.0153	.5679	+.1935	+9.0762	.9969
6	ε Tauri	3½	+90	+38	20 43.3	− 4 34 48	+0.9829	.5770	+.0464	+9.5099	.9760
7	ι Tauri	5	−47	−69	11 29.4	+ 9 39 27	−1.2070	.5737	+.0165	+9.5620	.9690
7	B.A.C. 1563	6½	+90	+22	12 35.8	+10 43 27	+0.6936	.5735	+.0144	+9.5260	.9740
7	*l* Tauri	5½	+39	−13	13 34.0	+11 39 38	+0.0495	.5733	+.0124	+9.5389	.9723
7	B.A.C. 1651	6½	+90	+23	19 17.3	− 6 49 15	+0.6877	.5717	+.0013	+9.5271	.9739
8	B.A.C. 1733	6½	+32	−21	0 49.5	− 1 28 48	−0.0819	.5696	−.0098	+9.5418	.9720
8	ζ Tauri	3½	−13	−69	2 33.9	+ 0 11 57	−0.8316	.5690	−.0134	+9.5554	.9700
8	B.A.C. 1835	6½	− 2	−63	7 18.3	+ 4 46 21	−0.6630	.5672	−.0221	+9.5507	.9767
8	χ^1 Orionis	4½	+29	−24	9 59.9	+ 7 22 17	−0.1195	.5660	−.0274	+9.5392	.9723
8	χ^2 Orionis	6	+65	+ 6	10 15.0	+ 7 36 54	+0.4389	.5660	−.0278	+9.5282	.9738
8	χ^3 Orionis	5	+59	+ 1	14 2.6	+11 16 38	+0.3551	.5644	−.0350	+9.5275	.9739
8	χ^4 Orionis	5	+29	−26	14 14.3	+11 27 53	−0.1359	.5643	−.0353	+9.5369	.9726
8	68 Orionis	6	+40	−15	17 52.8	− 9 1 8	+0.0677	.5626	−.0422	+9.5302	.9735
8	71 Orionis	5½	+90	+18	19 10.5	− 7 46 7	+0.6773	.5621	−.0444	+9.5170	.9751
9	16 Geminor.	6	−34	−70	1 3.6	− 2 5 2	−1.0990	.5595	−.0551	+9.5458	.9714
9	ν Geminor.	4½	−12	−70	1 31.8	− 1 37 50	−0.8243	.5590	−.0561	+9.5401	.9722
10	λ Geminor.	3½	+90	+62	0 26.2	− 3 29 0	+1.2644	.5477	−.0937	+9.4604	.9811
10	B.A.C. 2432	6½	−14	−72	2 45.7	− 1 14 2	−0.8630	.5465	−.0971	+9.5022	.9769
10	68 Geminor.	5½	+90	+60	7 51.3	+ 3 41 45	+1.2604	.5438	−.1045	+9.4433	.9826
10	*f* Geminor.	6	−30	−72	10 38.2	+ 6 23 16	−1.0737	.5424	−.1084	+9.4894	.9782
10	1 Cancri	6	+34	−30	19 12.4	− 9 18 43	−0.0498	.5382	−.1198	+9.4442	.9825
10	5 Cancri	6	−28	−73	21 24.4	− 7 10 54	−1.0593	.5368	−.1228	+9.4616	.9810
11	29 Cancri	6	+11	−57	10 58.1	+ 5 57 48	−0.4509	.5308	−.1386	+9.4031	.9856
11	B.A.C. 2872	6½	+49	−18	13 34.7	+ 8 29 39	+0.2162	.5295	−.1415	+9.3750	.9874
11	A^1 Caneri	6	+44	−23	18 23.4	−10 50 22	+0.1346	.5275	−.1465	+9.3574	.9884
11	A^2 Caneri	6	+67	− 5	20 18.6	− 8 58 38	+0.4697	.5270	−.1483	+9.3388	.9894
12	60 Cancri	6	+54	−16	0 55.6	− 4 29 51	+0.2858	.5248	−.1527	+9.3229	.9902
12	α Cancri	4	+26	−42	2 14.2	− 3 13 35	−0.1785	.5247	−.1539	+9.3312	.9898
12	κ Cancri	5	+58	−13	7 3.2	+ 1 26 51	+0.3604	.5229	−.1582	+9.2887	.9916
12	B.A.C. 3122	6½	− 9	−78	8 5.3	+ 2 27 5	−0.8011	.5225	−.1590	+9.3219	.9902
12	ω Leonis	6	+56	−15	17 53.3	+11 57 52	+0.3306	.5194	−.1668	+9.2240	.9938
12	3 Leonis	6½	+90	+53	17 55.4	+11 59 57	+1.2838	.5194	−.1669	+9.1834	.9949
12	*h* Leonis	6	− 3	−80	19 43.3	−10 15 18	−0.7137	.5190	−.1682	+9.2528	.9929
13	B.A.C. 3336	5½	+90	+53	3 16.3	− 2 55 19	+1.2906	.5173	−.1732	+9.1058	.9964
13	14 Sextantis	6	+71	− 6	14 15.3	+ 7 44 45	+0.5264	.5152	−.1795	+9.0382	.9974
13	16 Sextantis	6	+18	−55	15 33.5	+ 9 0 41	−0.3314	.5150	−.1802	+9.0754	.9969
14	34 Sextantis	6	− 9	−86	9 27.1	+ 2 23 51	−0.8121	.5142	−.1873	+8.8737	.9988
14	36 Sextantis	6	+44	−29	10 49.6	+ 3 43 58	+0.1332	.5143	−.1877	+8.7465	.9993
14	B.A.C. 3726	6	+90	+23	14 37.4	+ 7 25 18	+1.0221	.5144	−.1887	+8.4832	.9998
14	55 Leonis	6	+90	+20	16 28.9	+ 9 13 39	+0.9863	0.5144	−.1892	+8.4053	9.9999

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
May 14	p^2 Leonis	6	+90	+20	20 43.8	—10 38 44	+0.9856	0.5147	—.1900	+8.1028	0.0000
15	p^5 Leonis	5	+37	—35	2 9.1	— 5 22 40	+0.0200	.5153	—.1907	+8.0646	0.0000
16	χ Virginis	5	+47	—25	22 49.0	—10 0 51	+0.2163	.5287	—.1832	—9.1012	9.9965
16	B.A.C. 4259	6	+49	—23	22 53.0	— 9 56 57	+0.2444	.5288	—.1832	—9.1033	.9965
17	28 Virginis	6	+ 4	—75	0 1.2	— 8 51 11	—0.5702	.5297	—.1826	—9.0706	.9970
17	ψ Virginis	5	+67	— 8	6 24.7	— 2 38 56	+0.5174	.5328	—.1793	—9.1850	.9949
17	*g* Virginis	6	+75	— 2	13 8.1	+ 3 52 1	+0.6314	.5362	—.1752	—9.2204	.9933
17	B.A.C. 4394	5½	—60	—90	13 28.1	+ 4 11 27	—1.3213	.5367	—.1749	—9.1574	.9955
17	50 Virginis	6	+35	—35	14 3.4	+ 4 45 37	+0.0298	.5367	—.1745	—9.2225	.9939
17	58 Virginis	6	+12	—60	17 50.5	+ 8 25 41	—0.3819	.5389	—.1718	—9.2325	.9936
17	α Virginis	1	+13	—58	21 36.2	—11 55 44	—0.3560	.5411	—.1688	—9.2588	.9927
17	*i* Virginis	5	+78	+37	22 20.3	—11 13 2	+1.1795	.5414	—.1683	—9.3180	.9904
18	B.A.C. 4531	6	+78	+29	2 10.1	— 7 30 29	+1.0929	.5436	—.1650	—9.3361	.9896
18	86 Virginis	6	— 2	—79	7 33.3	— 2 17 39	—0.6077	.5470	—.1598	—9.3089	.9908
18	B.A.C. 4679	6½	+76	+ 8	16 14.2	+ 6 6 13	+0.7811	.5525	—.1509	—9.3933	.9863
19	5 Libræ	6	—57	—90	11 9.6	+ 0 23 25	—1.2474	.5647	—.1264	—9.4098	.9852
19	8 Libræ	6	—26	—90	13 15.7	+ 2 25 5	—0.9352	.5659	—.1234	—9.4251	.9841
19	α^2 Libræ	2½	—24	—90	13 20.7	+ 2 29 58	—0.8985	.5660	—.1233	—9.4263	.9840
19	B.A.C. 4896	6	+73	+16	13 37.2	+ 2 45 54	+0.9053	.5662	—.1226	—9.4715	.9801
19	ν^2 Libræ	6½	—53	—90	20 21.8	+ 9 16 20	—1.2165	.5703	—.1124	—9.4393	.9830
20	28 Libræ	6	+20	—41	2 26.9	— 8 51 29	—0.0818	.5742	—.1020	—9.4821	.9790
20	JUPITER		—26	—90	4 46.1	— 6 37 21	—0.8989	.5813	—.0995	—9.4685	.9804
20	41 Libræ	6	+49	—12	10 7.7	— 1 27 22	+0.4240	.5788	—.0887	—9.5094	.9761
20	κ Libræ	5	+71	+ 4	11 26.0	— 0 11 51	+0.7099	.5796	—.0859	—9.5177	.9751
20	λ Libræ	6	+70	+14	16 14.0	+ 4 25 37	+0.8588	.5817	—.0772	—9.5290	.9737
20	β^1 Scorpii	2	+30	—28	21 18.6	+ 9 18 57	+0.1519	.5844	—.0674	—9.5220	.9745
20	β^2 Scorpii	5½	+30	—28	21 18.8	+ 9 19 8	+0.1491	.5844	—.0674	—9.5219	.9745
20	ω^1 Scorpii	4½	+70	+26	21 51.9	+ 9 50 58	+1.0139	.5848	—.0661	—9.5401	.9722
20	ω^2 Scorpii	4½	+70	+46	22 6.3	+10 4 52	+1.2045	.5848	—.0658	—9.5443	.9716
21	ν^1 Scorpii	7	+ 1	—60	0 2.5	+11 56 46	—0.3720	.5859	—.0618	—9.5147	.9754
21	ν^2 Scorpii	4	+ 1	—60	0 2.9	+11 57 9	—0.3624	.5859	—.0618	—9.5149	.9754
21	ψ Ophiuchi	5	+19	—37	5 2.8	— 7 14 11	—0.0128	.5879	—.0515	—9.5281	.9738
21	B A.C. 5663	6½	+18	—36	17 2.2	+ 4 17 53	+0.0069	.5922	—.0260	—9.5380	.9725
21	B.A.C. 5700	6½	—35	—90	18 32.1	+ 5 44 21	—0.9190	.5929	—.0225	—9.5197	.9748
21	B.A.C. 5758	6	+69	+36	22 11.3	+ 9 15 12	+1.1171	.5936	—.0148	—9.5616	.9691
22	ξ Ophiuchi	5	+60	+ 1	4 9.6	— 9 0 16	+0.6488	.5950	—.0015	—9.5536	.9702
22	B.A.C. 5866	6	+69	+26	5 39.3	— 7 34 4	+1.0046	.5952	+.0021	—9.5604	.9692
22	B.A.C. 6081	6½	+31	—22	19 51.4	+ 6 5 3	+0.2514	.5965	+.0339	—9.5408	.9721
22	B.A.C. 6098	6	+67	+ 4	20 53.9	+ 7 5 3	+0.7023	.5964	+.0361	—9.5490	.9709
23	μ^1 Sagittarii	4	+69	+54	1 21.5	+11 22 20	+1.2474	.5963	+.0458	—9.5561	.9699
23	15 Sagittarii	5	+69	+20	1 56.9	+11 56 22	+0.9438	.5961	+.0474	—9.5497	.9708
23	16 Sagittarii	6	+58	— 2	1 57.6	+11 57 2	+0.5980	.5961	+.0474	—9.5428	.9718
23	21 Sagittarii	5	+70	+25	6 1.4	— 8 8 40	+0.9968	.5958	+.0562	—9.5466	.9713
23	B A.C. 6287	6	—19	—90	8 0.7	— 6 14 1	—0.7163	.5957	+.0605	—9.5085	.9761
23	B A.C. 6292	6	— 7	—71	8 27.7	— 5 48 2	—0.5049	.5957	+.0619	—9.5125	.9757
23	B.A.C. 6293	6½	—52	—90	8 30.6	— 5 45 12	—1.1676	.5955	+.0619	—9.4982	.9773
23	B.A.C. 6294	6	—38	—90	8 31.2	— 5 44 38	—1.0076	.5955	+.0619	—9.5013	.9770
23	B.A C. 6299	7	+ 7	—52	8 41.2	— 5 35 6	—0.2606	.5955	+.0622	—9.5174	.9751
23	B.A.C. 6301	7	— 1	—62	8 55.7	— 5 21 9	—0.4005	.5955	+.0626	—9.5140	.9755
24	B.A.C. 6536	6½	+71	+40	23 22.7	+ 8 32 29	+1.1647	.5927	+.0932	—9.5234	.9743
24	*d* Sagittarii	5	+71	+47	3 11.5	—11 47 32	+1.2196	.5916	+.1003	—9.5167	.9752
24	ϱ^1 Sagittarii	4	+41	—20	4 51.8	—10 11 4	+0.2852	.5912	+.1037	—9.4922	.9780
24	ϱ^2 Sagittarii	5½	+72	+ 7	4 55.0	—10 8 0	+0.7532	.5912	+.1038	—9.5027	.9768
24	B.A.C. 6658	6	+72	+32	7 28.3	— 7 40 33	+1.0990	.5901	+.1089	—9.5043	.9766
24	e^1 Sagittarii	5½	+ 7	—59	12 41.7	— 2 39 1	—0.3597	0.5884	+.1186	—9.4558	9.9815

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. *H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
May 24	e^2 Sagittarii	5	+ 3	—65	13 26.3	— 1 56 2	—0.4352	0.5880	+.1200	—9.4517	9.9819
24	B.A.C. 6746	6	—35	—90	13 52.4	— 1 30 58	—1.0462	.5880	+.1206	—9.4345	.9833
25	*q* Sagittarii	5½	+15	—50	19 50.1	+ 4 13 14	—0.2284	.5860	+.1311	—9.4363	.9832
25	B.A.C. 6992	6½	+56	—11	5 22.5	—10 35 41	+0.4516	.5820	+.1468	—9.4188	.9845
25	β Capricor.	3	+57	—11	5 28.4	—10 29 59	+0.4638	.5820	+.1469	—9.4187	.9845
25	B.A.C. 7221	6½	+45	—23	18 5.2	+ 1 39 4	+0.2479	.5772	+.1646	—9.3535	.9886
25	B.A.C. 7242	6	+ 1	—74	19 7.1	+ 2 38 40	—0.5508	.5769	+.1659	—9.3208	.9903
26	ν Aquarii	4½	+63	— 9	2 13.5	+ 9 29 43	+0.4926	.5752	+.1745	—9.3149	.9905
26	17 Aquarii	6	+ 5	—70	8 3.5	— 8 52 49	—0.5118	.5716	+.1808	—9.2350	.9935
26	19 Aquarii	6	+39	—31	9 2.4	— 7 56 0	+0.0983	.5714	+.1818	—9.2533	.9929
26	ξ Aquarii	4½	— 9	—90	14 31.9	— 2 38 9	—0.7705	.5694	+.1871	—9.1676	.9952
26	c^1 Capricor.	6	+81	+28	17 42.6	+ 0 25 46	+1.0844	.5681	+.1898	—9.2267	.9937
27	30 Aquarii	5½	+40	—31	1 49.1	+ 8 15 15	+0.0948	.5656	+.1968	—9.0966	.9966
27	44 Aquarii	6	+46	—26	7 50.7	— 9 47 4	+0.1907	.5639	+.1995	—9.0237	.9976
27	51 Aquarii	6	+52	—22	11 7.9	— 6 45 22	+0.2721	.5631	+.2011	—8.9831	.9980
27	κ Aquarii	5	+85	+15	17 16.1	— 0 49 50	+0.9124	.5616	+.2037	—8.9338	9.9984
28	B.A.C. 8152	6½	+83	— 1	14 0.2	— 4 48 7	+0.6519	.5587	+.2069	—7.8981	0.0000
28	κ Piscium	4½	+36	—37	15 33.3	— 3 18 11	—0.0099	.5586	+.2068	+7.9532	.0000
28	9 Piscium	6	+45	—28	15 41.9	— 3 9 54	+0.1577	.5586	+.2068	+7.8204	.0000
28	15 Piscium	6½	+90	+ 5	19 27.0	+ 0 27 39	+0.7447	.5585	+.2064	+7.9934	0.0000
28	16 Piscium	6	+38	—35	19 52.3	+ 0 52 2	+0.0316	.5583	+.2063	+8.3525	9.9999
28	λ Piscium	5	+90	+13	22 26.8	+ 3 21 18	+0.8841	.5583	+.2058	+8.2567	.9999
29	19 Piscium	6	+13	—64	0 25.3	+ 5 15 50	—0.4407	.5582	+.2054	+8.6788	.9995
29	B.A.C. 8276	6½	+90	+27	1 31.2	+ 6 19 27	+1.0797	.5583	+.2051	+8.4072	.9999
29	22 Piscium	6	+82	— 1	2 57.2	+ 7 42 32	+0.6465	.5583	+.2047	+8.5799	.9997
29	45 Piscium	6	—31	—83	18 16.7	— 1 29 8	—1.1202	.5591	+.1981	+9.0823	.9968
29	51 Piscium	6½	+50	—23	21 19.1	+ 1 27 5	+0.2286	.5595	+.1963	+9.0340	.9975
30	62 Piscium	6	+90	+48	4 30.2	+ 8 23 32	+1.2615	.5604	+.1911	+9.0579	.9972
30	δ Piscium	4½	+90	+23	4 40.9	+ 8 33 50	+1.0021	.5604	+.1910	+9.0763	.9969
31	π Piscium	6	+49	—20	2 23.3	+ 5 31 34	+0.2172	.5647	+.1700	+9.2976	.9913
June 1	29 Arietis	6½	+90	+25	2 59.5	+ 5 16 18	+0.9352	.5699	+.1371	+9.3965	.9861
1	ο Arietis	6½	+90	+67	8 4.8	+10 10 46	+1.3008	.5708	+.1292	+9.4054	.9855
1	π Arietis	5½	— 3	—72	10 6.7	—11 51 38	—0.6912	.5711	+.1259	+9.4633	.9808
1	ρ¹ Arietis	7½	— 2	—72	12 33.4	— 9 30 7	—0.6852	.5718	+.1216	+9.4704	.9802
1	ρ³ Arietis	6	—17	—73	13 11.6	— 8 53 18	—0.9181	.5718	+.1209	+9.4776	.9795
1	53 Arietis	6	+24	—39	17 59.4	— 4 15 42	—0.2272	.5727	+.1126	+9.4746	.9798
1	54 Arietis	6½	—37	—72	18 22.3	— 3 53 40	—1.1424	.5728	+.1118	+9.4963	.9795
5	ν Geminor.	4½	— 9	—70	9 56.5	+ 8 34 42	—0.7811	.5614	—.0556	+9.5401	.9722
6	B.A.C. 2432	6½	—10	—71	11 2.2	+ 8 50 17	—0.8036	.5495	—.0970	+9.5022	.9769
6	*f* Geminor.	6	—24	—72	18 51.4	— 7 35 39	—1.0093	.5455	—.1085	+9.4895	.9762
7	1 Cancri	6	+38	—26	3 22.2	+ 0 38 51	+0.0188	.5411	—.1202	+9.4443	.9825
7	5 Cancri	6	—22	—73	5 33.2	+ 2 45 41	—0.9881	.5400	—.1229	+9.4617	.9810
7	29 Cancri	6	+16	—52	19 1.3	— 8 11 15	—0.3730	.5337	—.1388	+9.4031	.9856
7	B.A.C. 2872	6½	+54	—14	21 36.9	— 5 40 26	+0.2950	.5322	—.1418	+9.3750	.9874
8	A¹ Cancri	6	+49	—19	2 23.8	— 1 2 15	+0.2160	.5302	—.1468	+9.3574	.9884
8	A² Cancri	6	+74	— 1	7 18.3	+ 3 48 48	+0.5517	.5294	—.1485	+9.3388	.9894
8	60 Cancri	6	+59	—11	8 53.7	+ 5 16 0	+0.3703	.5274	—.1530	+9.3229	.9902
8	α Cancri	4	+31	—37	10 11.9	+ 6 31 51	—0.0930	.5269	—.1541	+9.3312	.9898
8	κ Cancri	5	+65	— 8	14 59.5	+11 10 52	+0.4479	.5249	—.1584	+9.2888	.9916
8	B.A.C. 3122	6½	— 3	—78	16 1.3	—11 49 10	—0.7129	.5246	—.1593	+9.3219	.9902
9	ω Leonis	6	+63	—10	1 47.1	— 2 20 33	+0.4230	.5208	—.1670	+9.2241	.9938
9	*h* Leonis	6	+ 2	—74	3 36.8	— 0 34 3	—0.6209	.5204	—.1683	+9.2529	.9929
9	14 Sextantis	6	+80	— 1	22 7.7	— 6 35 6	+0.6269	.5155	—.1793	+9.0383	.9974
9	18 Sextantis	6	+24	—49	23 25.9	— 5 19 5	—0.2316	.5152	—.1800	+9.0755	.9969
10	34 Sextantis	6	— 3	—86	17 23.3	—11 52 19	—0.7112	0.5129	—.1868	+8.8738	9.9988

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
					h m	h m s					
June 10	36 Sextantis	6	+50°	−23°	18 45.5	−10 32 21	+0.2383	0.5127	−.1871	+8.7465	9.9993
10	B.A.C. 3726	6	+90	+32	22 34.6	− 6 49 42	+1.1295	.5127	−.1880	+8.4833	.9998
11	55 Leonis	6	+90	+29	0 26.8	− 5 0 42	+1.0942	.5126	−.1884	+8.4054	9.9999
11	p^2 Leonis	6	+90	+28	4 43.3	− 0 51 26	+1.0942	.5126	−.1891	+8.1031	0.0000
11	p^5 Leonis	5	+44	−29	10 11.1	+ 4 27 5	+0.1260	.5130	−.1898	+8.0649	0.0000
13	χ Virginis	5	+54	−19	7 21.1	+ 0 19 5	+0.3148	.5244	−.1821	−9.1012	9.9965
13	B.A.C. 4259	6	+55	−18	7 25.2	+ 0 23 2	+0.3430	.5247	−.1820	−9.1033	.9965
13	28 Virginis	6	+ 9	−67	8 44.4	+ 1 39 52	−0.4759	.5252	−.1813	−9.0706	.9970
13	ψ Virginis	5	+75	− 3	15 3.0	+ 7 47 9	+0.6136	.5280	−.1782	−9.1849	.9949
13	g Virginis	6	+80	+ 4	21 51.8	− 9 36 24	+0.7244	.5315	−.1740	−9.2404	.9933
13	B.A.C. 4394	5½	−45	−90	22 12.0	− 9 16 46	−1.2334	.5316	−.1739	−9.1573	.9955
13	50 Virginis	6	+40	−30	22 47.8	− 8 42 6	+0.1200	.5321	−.1734	−9.2225	.9939
14	58 Virginis	6	+17	−54	2 37.9	− 4 59 2	−0.2955	.5342	−.1707	−9.2325	.9936
14	α Virginis	1	+18	−53	6 26.6	− 1 17 29	−0.2716	.5365	−.1678	−9.2588	.9927
14	ι Virginis	5	+78	+49	7 11.2	− 0 34 12	+1.2694	.5367	−.1673	−9.3180	.9904
14	B.A.C. 4531	6	+78	+38	11 4.0	+ 3 11 17	+1.1800	.5390	−.1641	−9.3361	.9896
14	86 Virginis	6	+ 3	−72	16 31.1	+ 8 28 4	−0.5305	.5426	−.1591	−9.3088	.9908
15	B.A.C. 4679	6½	+76	+13	1 17.9	− 7 2 8	+0.8557	.5481	−.1504	−9.3933	.9863
15	5 Libræ	6	−48	−90	20 23.3	+11 25 6	−1.1915	.5619	−.1264	−9.4098	.9852
15	8 Libræ	6	−23	−90	22 30.2	−10 32 26	−0.8804	.5632	−.1233	−9.4251	.9841
15	$α^2$ Libræ	2½	−20	−90	22 35.2	−10 27 32	−0.8437	.5632	−.1232	−9.4263	.9840
15	B.A.C. 4896	6	+73	+21	22 51.9	−10 11 28	+0.9607	.5675	−.1229	−9.4715	.9801
16	JUPITER		−37	−90	8 57.9	− 0 26 39	−1.0551	.5742	−.1082	−9.4821	.9819
16	28 Libræ	6	+23	−39	11 44.9	+ 2 14 27	−0.0392	.5724	−.1027	−9.4821	.9790
16	B.A.C. 5109	6½	+71	+30	16 45.7	+ 7 4 26	+1.0728	.5761	−.0941	−9.5172	.9751
16	41 Libræ	6	+51	−11	19 27.0	+ 9 39 58	+0.4571	.5780	−.0892	−9.5094	.9761
16	κ Libræ	5	+71	+ 6	20 44.5	+10 54 39	+0.7422	.5786	−.0870	−9.5177	.9751
17	λ Libræ	6	+70	+16	1 32.2	− 8 28 14	+0.8853	.5817	−.0779	−9.5290	.9737
17	$β^1$ Scorpii	2	+31	−26	6 35.9	− 3 35 46	+0.1745	.5849	−.0681	−9.5220	.9745
17	$β^2$ Scorpii	5½	+31	−27	6 36.1	− 3 35 35	+0.1713	.5849	−.0681	−9.5219	.9745
17	$ω^1$ Scorpii	4½	+70	+27	7 9.0	− 3 3 54	+1.0323	.5852	−.0673	−9.5401	.9722
17	$ω^2$ Scorpii	4½	+70	+49	7 23.4	− 2 50 3	+1.2229	.5855	−.0664	−9.5443	.9716
17	$ν^1$ Scorpii	7	+ 2	−59	9 19.1	− 0 58 41	−0.3502	.5864	−.0630	−9.5147	.9754
17	$ν^2$ Scorpii	4	+ 2	−58	9 19.5	− 0 58 16	−0.3406	.5864	−.0630	−9.5149	.9754
17	ψ Ophiuchi	5	+20	−36	14 17.8	+ 3 48 45	+0.0024	.5891	−.0528	−9.5281	.9738
18	B.A.C. 5663	6½	+18	−36	2 11.1	− 8 45 16	+0.0086	.5951	−.0274	−9.5380	.9725
18	B.A.C. 5700	6½	−35	−90	3 40.0	− 7 19 46	−0.9131	.5958	−.0238	−9.5197	.9748
18	B.A.C. 5758	6	+69	+35	7 16.7	− 3 51 31	+1.1061	.5972	−.0161	−9.5616	.9691
18	ξ Ophiuchi	5	+58	0	13 10.2	+ 1 48 12	+0.6333	.5992	−.0027	−9.5536	.9702
18	B.A.C. 5866	6	+69	+24	14 38.5	+ 3 13 4	+0.9847	.5996	+.0010	−9.5604	.9692
19	B.A.C. 6081	6½	+31	−24	4 36.1	− 7 22 26	+0.2201	.6024	+.0331	−9.5408	.9721
19	B.A.C. 6098	6	+64	+ 2	5 37.3	− 6 23 39	+0.6654	.6026	+.0355	−9.5490	.9709
19	$μ^1$ Sagittarii	4	+69	+46	9 59.5	− 2 11 50	+1.2001	.6028	+.0453	−9.5561	.9699
19	15 Sagittarii	5	+69	+17	10 34.2	− 1 38 34	+0.8987	.6028	+.0469	−9.5497	.9708
19	16 Sagittarii	6	+55	− 5	10 34.8	− 1 37 55	+0.5563	.6028	+.0469	−9.5428	.9718
19	21 Sagittarii	5	+70	+20	14 33.3	+ 2 11 6	+0.9458	.6028	+.0560	−9.5466	.9713
19	B.A.C. 6287	6	−21	−90	16 29.9	+ 4 3 4	−0.7514	.6028	+.0604	−9.5084	.9761
19	B.A.C. 6292	6	− 9	−74	16 56.7	+ 4 28 49	−0.5425	.6028	+.0612	−9.5125	.9757
19	B.A.C. 6293	6½	−54	−90	16 59.2	+ 4 31 11	−1.1822	.6028	+.0612	−9.4982	.9773
19	B.A.C. 6294	6	−41	−90	16 59.8	+ 4 31 45	−1.0404	.6028	+.0613	−9.5012	.9770
19	B.A.C. 6299	7	+ 4	−55	17 9.5	+ 4 41 3	−0.3014	.6028	+.0615	−9.5173	.9751
19	B.A.C. 6301	7	− 3	−65	17 23.7	+ 4 54 39	−0.4400	.6028	+.0625	−9.5140	.9755
20	B.A.C. 6536	6½	+71	+32	7 29.4	− 5 33 3	+1.0902	.6010	+.0932	−9.5234	.9743
20	d Sagittarii	5	+71	+37	11 12.2	− 1 59 5	+1.1397	.6002	+.1006	−9.5167	.9752
20	$ρ^1$ Sagittarii	4	+37	−24	12 49.8	− 0 25 20	+0.2147	0.5998	+.1042	−9.4922	9.9780

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
June 20	ρ^2 Sagittarii	5½	+69	+ 2	12 52.9	— 0 22 17	+0.6770	0.5998	+.1042	—9.5027	9.9768
20	B.A.C. 6658	6	+72	+25	15 22.0	+ 2 0 58	+1.0155	.5990	+.1095	—9.5043	.9766
20	e^1 Sagittarii	5½	+ 3	—64	20 26.8	+ 6 53 51	—0.4309	.5976	+.1194	—9.4558	.9815
20	e^2 Sagittarii	5	— 1	—70	21 10.2	+ 7 35 32	—0.5065	.5973	+.1204	—9.4517	.9819
20	B.A.C. 6746	6	—41	—90	21 35.6	+ 7 59 54	—1.1102	.5973	+.1215	—9.4345	.9833
21	*g* Sagittarii	5½	+11	—55	3 23.1	—10 26 5	—0.3092	.5951	+.1323	—9.4363	.9832
21	B.A.C. 6992	6½	+50	—17	12 39.0	— 1 31 29	+0.3518	.5916	+.1480	—9.4188	.9845
21	β Capricor.	3	+51	—16	12 44.8	— 1 25 59	+0.3637	.5916	+.1481	—9.4187	.9845
22	B.A.C. 7221	6½	+39	—29	0 59.9	+10 21 19	+0.1376	.5864	+.1663	—9.3535	.9886
22	B.A.C. 7242	6	— 4	—84	2 0.8	+11 19 57	—0.6497	.5859	+.1676	—9.3207	.9903
22	ν Aquarii	4½	+54	—16	8 54.5	— 6 1 47	+0.3720	.5826	+.1764	—9.3148	.9905
22	17 Aquarii	6	— 1	—81	14 34.5	— 0 34 14	—0.6268	.5800	+.1828	—9.2350	.9935
22	19 Aquarii	6	+32	—38	15 31.9	+ 0 20 59	—0.0250	.5797	+.1838	—9.2533	9929
22	ξ Aquarii	4½	—16	—90	20 53.2	+ 5 30 38	—0.8869	.5773	+.1889	—9.1676	.9952
22	c^1 Capricor.	6	+81	+18	23 59.0	+ 8 29 41	+0.9445	.5760	+.1917	—9.2266	.9937
23	c^2 Capricor.	6½	+80	+44	0 31.5	+ 9 0 57	+1.2442	.5756	+.1922	—9.2352	.9935
23	30 Aquarii	5½	+33	—39	7 53.8	— 7 52 34	—0.0399	.5725	+.1977	—9.0965	.9966
23	44 Aquarii	6	+38	—33	13 56.2	— 2 3 7	+0.0512	.5704	+.2014	—9.0235	.9976
23	51 Aquarii	6	+43	—29	17 0.5	+ 0 54 38	+0.1300	.5694	+.2029	—8.9830	.9980
23	κ Aquarii	5	+78	+ 6	23 1.5	+ 6 42 57	+0.7619	.5673	+.2053	—8.9336	9.9984
24	B.A.C. 8152	6½	+68	— 9	19 26.9	+ 2 25 53	+0.4984	.5617	+.2079	—7.8966	0.0000
24	κ Piscium	4½	+28	—46	20 58.9	+ 3 54 47	—0.1599	.5616	+.2078	+7.9545	.0000
24	9 Piscium	6	+37	—36	21 7.5	+ 4 3 2	+0.0068	.5614	+.2078	+7.8222	.0000
25	15 Piscium	6½	+76	— 4	0 50.4	+ 7 38 18	+0.5905	.5608	+.2072	+7.9946	0.0000
25	16 Piscium	6	+30	—43	1 15.3	+ 8 2 23	—0.1191	.5608	+.2072	+8.3729	9.9999
25	λ Piscium	5	+90	+ 4	3 48.5	+10 30 19	+0.7296	.5604	+.2066	+8.2573	.9999
25	19 Piscium	6	+ 4	—76	5 45.9	—11 36 15	—0.5895	.5601	+.2061	+8.6791	.9995
25	B.A.C. 8276	6½	+90	+16	6 51.5	—10 32 57	+0.9245	.5598	+.2057	+8.4076	.9999
25	22 Piscium	6	+68	— 9	8 16.9	— 9 10 27	+0.4932	.5598	+.2058	+8.5802	.9997
25	45 Piscium	6	—46	—83	23 33.2	+ 5 34 40	—1.2671	.5587	+.1981	+9.0824	.9968
26	51 Piscium	6½	+41	—31	2 35.6	+ 8 30 52	+0.0803	.5587	+.1962	+9.0340	.9975
26	62 Piscium	6	+90	+32	9 47.5	— 8 31 53	+1.1161	.5589	+.1910	+9.0579	.9972
26	δ Piscium	4½	+90	+13	9 58.1	— 8 21 35	+0.8570	.5589	+.1909	+9.0764	.9969
27	π Piscium	6	+41	—27	7 49.4	—11 14 59	+0.0846	.5607	+.1697	+9.2977	.9913
28	29 Arietis	6½	+90	+17	8 44.6	—11 11 15	+0.8204	.5591	+.1354	+9.3966	.9861
28	ο Arietis	6½	+90	+47	13 54.7	— 6 11 57	+1.1899	.5599	+.1276	+9.4055	.9855
28	π Arietis	5½	— 9	—73	15 58.5	— 4 12 26	—0.7995	.5656	+.1256	+9.4633	.9808
28	ρ^3 Arietis	6	—26	—73	19 6.4	— 1 11 4	—1.0247	.5661	+.1206	+9.4776	.9795
28	53 Arietis	6	+18	—45	23 59.0	+ 3 31 21	—0.3244	.5669	+.1126	+9.4746	.9798
29	54 Arietis	6½	—50	—72	0 22.2	+ 3 53 44	—1.2448	.5670	+.1117	+9.4963	.9775
29	B.A.C. 1096	6½	+90	+24	11 43.8	— 9 8 32	+0.8480	.5685	+.0922	+9.4753	.9797
29	13 Tauri	6½	—11	—71	15 17.7	— 5 42 11	—0.8160	.5687	+.0860	+9.5184	.9750
30	ω^1 Tauri	6	+41	—17	3 4.0	+ 5 39 16	+0.0828	.5694	+.0642	+9.5180	.9750
30	ω^2 Tauri	5½	— 8	—70	6 36.2	+ 9 4 0	—0.7580	.5695	+.0573	+9.5390	.9723
39	B.A.C. 1361	6	+90	+41	10 0.1	—11 39 17	+1.0351	.5695	+.0509	+9.5066	.9764
30	ε Tauri	3½	+90	+36	11 36.2	—10 6 30	+0.9567	.5696	+.0475	+9.5099	.9760
July 1	ι Tauri	5	—51	—69	2 42.1	+ 4 27 33	—1.2277	.5686	+.0184	+9.5620	.9690
1	B.A.C. 1563	6½	+90	+22	3 49.7	+ 5 32 48	+0.6937	.5685	+.0163	+9.5260	.9740
1	*l* Tauri	5½	+39	—14	4 49.1	+ 6 30 5	+0.0455	.5685	+.0144	+9.5389	.9723
1	B.A.C. 1651	6½	+90	+23	10 38.2	—11 52 56	+0.7010	.5677	+.0030	+9.5271	.9739
1	ζ Tauri	3½	—12	—69	18 0.0	— 4 46 32	—0.8160	.5662	—.0110	+9.5554	.9700
4	5 Cancri	6	—16	—73	12 53.9	+11 54 9	—0.8937	.5414	—.1216	+9.4617	.9810
5	29 Cancri	6	+22	—44	2 21.0	+ 0 56 6	—0.2569	.5354	—.1378	+9.4031	.9856
5	B.A.C. 2872	6½	+63	— 7	4 56.2	+ 3 26 36	+0.4160	.5341	—.1407	+9.3750	.9874
5	A^1 Cancri	6	+58	—12	9 42.5	+ 8 4 6	+0.3441	0.5320	—.1458	+9.3574	9.9884

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
July 5	A² Cancri	6	+89	+ 7	11 36.7	+ 9 54 51	+0.6830	0.5311	—.1478	+9.3388	9.9894
5	60 Cancri	6	+70	— 4	16 11.4	— 9 38 40	+0.5082	.5292	—.1522	+9.3229	.9902
5	α Cancri	4	+39	—29	17 29.4	— 8 23 4	+0.0461	.5287	—.1536	+9.3312	.9898
5	κ Cancri	5	+78	0	22 16.1	— 3 44 49	+0.5944	.5267	—.1576	+9.2888	.9916
5	B.A.C. 3122	6½	+ 5	—68	23 17.8	— 2 45 1	—0.5665	.5265	—.1585	+9.3219	.9902
6	ω Leonis	6	+76	— 1	9 1.9	+ 6 41 58	+0.5845	.5229	—.1663	+9.2241	.9938
6	h Leonis	6	+11	—62	10 51.3	+ 8 28 10	—0.4587	.5223	—.1676	+9.2529	.9929
7	π Leonis	5	—44	—82	1 47.9	— 1 1 10	—1.2439	.5179	—.1770	+9.1793	.9950
7	14 Sextantis	6	+90	+10	5 20.2	+ 2 25 2	+0.8139	.5170	—.1787	+9.0383	.9974
7	16 Sextantis	6	+34	—37	6 38.1	+ 3 40 45	—0.0444	.5164	—.1794	+9.0755	.9969
8	34 Sextantis	6	+ 9	—68	0 36.3	— 2 51 37	—0.5086	.5133	—.1860	+8.8738	.9988
8	36 Sextantis	6	+64	—12	1 58.7	— 1 31 30	+0.4454	.5131	—.1864	+8.7466	.9993
8	B.A.C. 3726	6	+90	+61	5 48.4	+ 2 11 44	+1.3428	.5127	—.1873	+8.4835	.9998
8	55 Leonis	6	+90	+53	7 41.0	+ 4 1 6	+1.3086	.5126	—.1876	+8.4056	9.9999
8	p² Leonis	6	+90	+53	11 58.4	+ 8 11 19	+1.3119	.5125	—.1883	+8.1034	0.0000
8	p³ Leonis	6	—38	—88	13 45.9	+ 9 55 48	—1.2009	.5124	—.1885	+8.6713	9.9995
8	p⁵ Leonis	5	+57	—18	17 27.7	—10 28 37	+0.3439	.5124	—.1889	+8.0653	0.0000
9	υ Leonis	4½	—38	—90	5 58.8	— 1 41 17	—1.1998	.5129	—.1890	—7.1281	0.0000
10	χ Virginis	5	+70	— 6	15 6.4	+ 9 52 9	+0.5455	.5204	—.1806	—9.1011	9.9965
10	B.A.C. 4259	6	+72	— 5	15 10.6	+ 9 56 10	+0.5737	.5204	—.1805	—9.1032	.9965
10	28 Virginis	6	+21	—51	16 31.0	+11 14 16	—0.2512	.5209	—.1799	—9.0705	.9970
10	ψ Virginis	5	+81	+11	22 56.0	— 6 32 6	+0.8449	.5231	—.1766	—9.1849	.9949
11	g Virginis	6	+80	+18	5 52.1	+ 0 11 39	+0.9545	.5264	—.1725	—9.2404	.9933
11	B.A.C. 4394	5½	—25	—90	6 12.8	+ 0 31 44	+1.0193	.5265	—.1724	—9.1573	.9955
11	50 Virginis	6	+54	—18	6 49.2	+ 1 7 4	+0.3447	.5269	—.1719	—9.2225	.9939
11	58 Virginis	6	+29	—41	10 43.7	+ 4 54 33	—0.0760	.5286	—.1692	—9.2325	.9936
11	α Virginis	1	+30	—39	14 36.9	+ 8 40 37	—0.0540	.5306	—.1663	—9.2588	.9927
12	86 Virginis	6	+14	—56	0 53.9	— 5 21 21	—0.3218	.5362	—.1579	—9.3088	.9908
12	B.A.C. 4679	6½	+76	+28	9 52.0	+ 3 19 54	+1.0601	.5417	—.1491	—9.3933	.9863
13	5 Libræ	6	—32	—90	5 22.8	— 1 47 30	—1.0162	.5547	—.1257	—9.4098	.9852
13	8 Libræ	6	—11	—90	7 32.4	+ 0 17 48	—0.7049	.5563	—.1227	—9.4251	.9841
13	α² Libræ	2½	— 9	—88	7 37.6	+ 0 22 47	—0.6679	.5563	—.1227	—9.4263	.9840
13	B.A.C. 4896	6	+73	+37	7 54.6	+ 0 39 12	+1.1516	.5565	—.1224	—9.4714	.9801
13	ν¹ Libræ	5	—55	—90	14 45.0	+ 7 15 38	—1.2348	.5612	—.1125	—9.4330	.9834
13	ν² Libræ	6½	—32	—90	14 50.0	+ 7 20 29	—1.0032	.5612	—.1124	—9.4392	.9830
13	**JUPITER**		—24	—90	16 7.4	+ 8 35 14	—0.8853	.5625	—.1104	—9.4457	.9824
13	28 Libræ	6	+32	—29	21 4.0	—10 38 27	+0.1261	.5656	—.1028	—9.4820	.9790
14	B.A.C. 5109	6½	+71	+50	2 10.8	— 5 42 24	+1.2385	.5692	—.0944	—9.5171	.9751
14	41 Libræ	6	+63	— 1	4 55.3	— 3 3 44	+0.6143	.5712	—.0897	—9.5093	.9761
14	κ Libræ	5	+71	+17	6 14.3	— 1 47 34	+0.8997	.5721	—.0875	—9.5177	.9751
14	λ Libræ	6	+70	+27	11 7.3	+ 2 54 53	+1.0359	.5754	—.0788	—9.5290	.9737
14	β¹ Scorpii	2	+40	—19	16 16.2	+ 7 52 33	+0.3124	.5789	—.0692	—9.5220	.9745
14	β² Scorpii	5½	+40	—19	16 16.4	+ 7 52 45	+0.3092	.5789	—.0692	—9.5219	.9745
14	ω¹ Scorpii	4½	+70	+42	16 49.9	+ 8 24 59	+1.1741	.5794	—.0680	—9.5401	.9722
14	ν¹ Scorpii	7	+ 9	—50	19 2.1	+10 32 21	—0.2199	.5809	—.0638	—9.5147	.9754
14	ν² Scorpii	4	+10	—49	19 2.5	+10 32 45	—0.2102	.5808	—.0638	—9.5149	.9754
14	B.A.C. 5408	6½	—61	—90	20 11.1	+11 38 47	—1.2379	.5814	—.0617	—9.4942	.9778
15	ψ Ophiuchi	5	+27	—29	0 5.3	— 8 35 40	+0.1261	.5841	—.0539	—9.5281	.9738
15	B A.C. 5663	6½	+24	—30	12 7.6	+ 2 59 22	+0.1112	.5910	—.0288	—9.5380	.9725
15	B.A.C. 5700	6½	—28	—90	13 37.5	+ 4 25 47	—0.8158	.5921	—.0253	—9.5197	.9748
15	B.A.C. 5758	6	+69	+47	17 16.2	+ 7 56 7	+1.2017	.5935	—.0178	—9.5616	.9691
15	ξ Ophiuchi	5	+68	+ 5	23 12.5	—10 21 25	+0.7163	.5962	—.0045	—9.5536	.9702
16	B.A.C. 5866	6	+69	+31	0 41.4	— 8 55 59	+1.0654	.5972	—.0009	—9.5604	.9692
16	B.A.C. 6081	6½	+34	—21	14 41.6	+ 4 31 8	+0.2719	.6019	+.0311	—9.5408	.9721
16	B.A.C. 6098	6	+69	+ 5	15 42.8	+ 5 29 55	+0.7148	0.6020	+.0334	—9.5490	9.9709

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
July 16	μ^1 Sagittarii	4	+69	+53	20 4.7	+ 9 41 28	+1.2382	0.6030	+.0432	—9.5561	9.9699
16	15 Sagittarii	5	+69	+20	20 39.3	+10 14 40	+0.9363	.6031	+.0448	—9.5497	.9708
16	16 Sagittarii	6	+58	— 2	20 40.0	+10 15 19	+0.5947	.6031	+.0448	—9.5427	.9718
17	21 Sagittarii	5	+70	+23	0 37.7	— 9 56 26	+0.9745	.6038	+.0540	—9.5465	.9713
17	B.A.C. 6287	6	—20	—90	2 33.7	— 8 5 0	—0.7216	.6039	+.0584	—9.5084	.9761
17	B A.C. 6292	6	— 8	—72	3 0.4	— 7 39 22	—0.5142	.6039	+.0591	—9.5125	.9757
17	B.A.C. 6293	6½	—51	—90	3 2.9	— 7 37 2	—1.1516	.6039	+.0592	—9.4982	.9773
17	B.A.C. 6294	6	—39	—90	3 3.5	— 7 36 28	—1.0106	.6040	+.0593	—9.5012	.9770
17	B.A.C. 6299	7	+ 6	—53	3 13.1	— 7 27 13	—0.2745	.6041	+.0595	—9.5174	.9751
17	B.A.C. 6301	7	— 2	—63	3 27.2	— 7 13 40	—0.4129	.6041	+.0605	—9.5140	.9755
17	B.A.C. 6536	6½	+71	+31	17 25.9	+ 6 11 28	+1.0792	.6045	+.0916	—9.5234	.9743
17	*d* Sagittarii	5	+71	+35	21 5.9	+ 9 42 41	+1.1197	.6041	+.0991	—9.5167	.9752
17	ϱ^1 Sagittarii	4	+36	—25	22 42.2	+11 15 9	+0.1974	.6041	+.1027	—9.4922	.9780
17	ϱ^2 Sagittarii	5½	+67	+ 1	22 45.2	+11 18 4	+0.6564	.6040	+.1028	—9.5027	.9768
18	B.A.C. 6658	6	+72	+23	1 12.2	—11 20 47	+0.9870	.6037	+.1077	—9.5043	.9766
18	e^1 Sagittarii	5½	+ 1	—66	6 12.2	— 5 32 43	—0.4598	.6028	+.1179	—9.4558	.9815
18	e^2 Sagittarii	5	— 3	—73	6 54.9	— 4 51 45	—0.5363	.6027	+.1194	—9.4517	.9819
18	B.A.C. 6746	6	—44	—90	7 19.8	— 4 27 50	—1.1358	.6027	+.1201	—9.4345	.9833
18	*g* Sagittarii	5½	+ 8	—58	13 0.9	+ 0 59 45	—0.3539	.6015	+.1312	—9.4363	.9832
18	B.A.C. 6992	6½	+45	—21	22 5.1	+ 9 42 32	+0.2807	.5990	+.1475	—9.4188	.9845
18	β Capricor.	3	+46	—20	22 10.7	+ 9 47 56	+0.2924	.5988	+.1476	—9.4187	.9845
19	B.A.C. 7221	6½	+33	—34	10 7.5	— 2 43 6	+0.0426	.5948	+.1666	—9.3535	.9886
19	B.A.C. 7242	6	—10	—90	11 6.8	— 1 46 7	—0.7374	.5946	+.1680	—9.3207	.9903
19	8 Aquarii	6	+77	+40	13 51.5	+ 0 52 16	+1.1970	.5935	+.1719	—9.3704	.9877
19	ν Aquarii	4½	+47	—22	17 48.9	+ 4 40 36	+0.2572	.5920	+.1773	—9.3148	.9805
19	17 Aquarii	6	— 8	—90	23 19.0	+ 9 58 8	—0.7398	.5898	+.1837	—9.2350	.9935
20	19 Aquarii	6	+25	—45	0 14.7	+10 51 39	—0.1480	.5894	+.1848	—9.2533	.9929
20	ξ Aquarii	4½	—25	—90	5 26.2	— 8 8 34	—1.0083	.5872	+.1904	—9.1675	.9952
20	c^1 Capricor.	6	+81	+ 8	8 26.2	— 5 15 20	+0.7912	.5860	+.1932	—9.2265	.9937
20	c^2 Capricor.	6½	+70	+28	8 57.6	— 4 45 7	+1.0857	.5859	+.1936	—9.2351	.9935
20	30 Aquarii	5½	+24	—47	16 5.8	+ 2 7 11	—0.1939	.5832	+.1995	—9.0964	.9966
20	44 Aquarii	6	+29	—43	21 56.3	+ 7 44 48	—0.1147	.5809	+.2033	—9.0234	.9976
21	51 Aquarii	6	+33	—39	0 54.5	+10 36 29	—0.0422	.5797	+.2050	—8.9829	.9980
21	κ Aquarii	5	+73	— 5	6 43.7	— 7 47 7	+0.5703	.5776	+.2076	—8.9335	9.9984
22	B.A.C. 8152	6½	+53	—21	2 29.5	+11 16 9	+0.2831	.5715	+.2104	—7.8952	0.0000
22	κ Piscium	4½	+16	—58	3 58.7	—11 17 51	—0.3675	.5712	+.2102	+7.9558	.0000
22	9 Piscium	6	+25	—48	4 7.0	—11 9 50	—0.2034	.5711	+.2102	+7.8424	.0000
22	15 Piscium	6½	+59	—16	7 43.0	— 7 41 30	+0.3679	.5702	+.2097	+7.9957	0.0000
22	16 Piscium	6	+18	—56	8 7.3	— 7 18 4	—0.3320	.5699	+.2096	+8.3734	9.9999
22	λ Piscium	5	+68	— 9	10 35.8	— 4 54 47	+0.5020	.5695	+.2089	+8.2580	.9999
22	19 Piscium	6	— 8	—87	12 30.0	— 3 4 40	—0.8004	.5691	+.2085	+8.6793	.9995
22	B.A.C. 8276	6½	+88	+ 2	13 33.4	— 2 3 27	+0.6915	.5689	+.2081	+8.4081	.9999
22	22 Piscium	6	+52	—22	14 56.3	— 0 43 28	+0.2647	.5686	+.2077	+8.5805	.9997
22	25 Piscium	6½	+90	+39	15 25.6	— 0 15 15	+1.2064	.5685	+.2074	+8.3692	.9999
23	51 Piscium	6½	+28	—44	8 45.8	— 7 31 26	—0.1549	.5659	+.1982	+9.0342	.9975
23	62 Piscium	6	+90	+14	15 47.8	— 0 44 9	+0.8664	.5652	+.1929	+9.0580	.9972
23	δ Piscium	4½	+78	— 1	15 58.2	— 0 34 5	+0.6100	.5652	+.1928	+9.0765	.9969
24	52 Piscium	6	+28	—41	13 25.7	— 3 51 20	—0.1554	.5646	+.1709	+9.2978	.9913
25	29 Arietis	6½	+78	+ 4	14 6.4	— 4 2 12	+0.5954	.5653	+.1376	+9.3066	.9861
25	*o* Arietis	6½	+90	+28	19 15.0	+ 0 55 41	+0.9712	.5657	+.1298	+9.4055	.9855
25	π Arietis	5½	—25	—73	21 18.5	+ 2 54 52	—1.0202	.5657	+.1265	+9.4684	.9808
26	ϱ^2 Arietis	6	—49	—73	0 25.9	+ 5 55 47	—1.2425	.5660	+.1212	+9.4777	.9795
26	53 Arietis	6	+ 6	—60	5 18.2	+10 37 52	—0.5405	.5662	+.1135	+9.4747	.9798
26	B.A.C. 1096	6½	+85	+11	17 4.0	— 2 1 2	+0.6421	.5666	+.0931	+9.4753	.9797
26	13 Tauri	6½	—26	—71	20 38.6	+ 1 26 2	—1.0165	0.5668	+.0866	+9.5184	9.9750

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
July 27	B.A.C. 1240	6½	+90	+51	4 49.2	+ 9 19 32	+1.1708	0.5669	+.0718	+9.4855	9.9787
27	ω¹ Tauri	6	+30	—27	8 28.6	—11 8 44	—0.1036	.5666	+.0649	+9.5180	.9750
27	ω² Tauri	5½	—20	—70	12 2.3	— 7 42 33	—0.9399	.5665	+.0585	+9.5390	.9723
27	B.A.C. 1361	6	+90	+28	15 27.7	— 4 24 17	+0.8596	.5665	+.0518	+9.5066	.9764
27	ε Tauri	3½	+90	+24	17 4.7	— 2 50 41	+0.7832	.5662	+.0490	+9.5099	.9760
28	B.A.C. 1563	6½	+75	+13	9 27.2	—11 2 21	+0.5450	.5647	+.0177	+9.5260	.9740
28	*l* Tauri	5½	+30	—22	10 27.1	—10 4 29	—0.1032	.5644	+.0158	+9.5389	.9723
28	B.A.C. 1651	6½	+77	+15	16 19.9	— 4 23 52	+0.5638	.5636	+.0050	+9.5271	.9739
28	B.A.C. 1733	6½	+25	—27	22 0.6	+ 1 5 3	—0.1933	.5625	—.0058	+9.5418	.9720
28	ζ Tauri	3½	—21	—69	23 47.5	+ 2 48 20	—0.9441	.5621	—.0059	+9.5554	.9700
29	B.A.C. 1835	6½	— 8	—69	4 38.5	+ 7 29 20	—0.7553	.5613	—.0184	+9.5507	.9707
29	χ¹ Orionis	4½	+25	—28	7 23.3	+10 8 30	—0.1955	.5607	—.0235	+9.5302	.9723
29	χ² Orionis	6	+60	+ 2	7 38.7	+10 23 25	+0.3668	.5607	—.0239	+9.5282	.9738
29	χ³ Orionis	5	+55	— 2	11 30.8	— 9 52 22	+0.2983	.5595	—.0310	+9.5275	.9739
29	χ⁴ Orionis	5	+25	—29	11 42.7	— 9 40 54	—0.1949	.5595	—.0313	+9.5369	.9726
29	68 Orionis	6	+38	—17	15 25.0	— 6 6 2	+0.0251	.5583	—.0381	+9.5302	.9735
29	71 Orionis	5½	+86	+16	16 44.0	— 4 49 44	+0.6455	.5581	—.0403	+9.5170	.9751
29	16 Geminor.	6	—36	—70	22 42.5	+ 0 56 43	—1 1220	.5564	—.0509	+9.5458	.9714
29	ν Geminor.	4½	—13	—70	23 11.0	+ 1 24 17	—0.8427	.5564	—.0515	+9.5401	.9722
31	B.A.C. 2422	6½	— 8	—72	0 37.2	+ 2 0 22	—0.7734	.5477	—.0932	+9.5022	.9769
Aug. 3	π Leonis	5	—30	—82	8 13.4	+ 7 11 51	—1.1051	.5194	—.1755	+9.1794	.9950
3	B.A.C. 3529	6	—49	—83	19 5.2	— 6 15 2	—1.2838	.5171	—.1807	+9.0926	.9966
4	34 Sextantis	6	+19	—55	6 59.5	+ 5 19 8	—0.3242	.5151	—.1848	+8.8739	.9988
4	36 Sextantis	6	+81	— 1	8 21.9	+ 6 39 10	+0.6343	.5150	—.1853	+8.7466	9.9993
4	*p*⁵ Leonis	5	+73	— 6	23 50.3	— 2 18 33	+0.5600	.5139	—.1879	+8.0655	0.0000
5	υ Leonis	4½	—20	—90	12 22.1	+ 9 52 7	—0.9723	.5147	—.1882	—7.1256	0.0000
6	*f* Virginis	6	—62	—90	20 22.9	— 7 1 38	—1.3341	.5188	—.1797	—8.9478	9.9983
6	χ Virginis	5	+83	+10	21 40.4	— 5 46 21	+0.8192	.5190	—1792	—9.1011	.9965
6	B.A.C. 4259	6	+83	+11	21 44.6	— 5 42 19	+0.8480	.5190	—.1792	—9.1032	.9965
6	28 Virginis	6	+36	—35	23 5.8	— 4 23 26	+0.0188	.5194	—.1786	—9.0705	.9970
7	ψ Virginis	5	+81	+32	5 34.8	+ 1 54 17	+1.1272	.5214	—.1752	—9.1849	.9949
7	*g* Virginis	6	+70	+44	12 36.0	+ 8 43 8	+1.2417	.5238	—.1710	—9.2403	.9933
7	B.A.C. 4394	5½	— 8	—90	12 57.0	+ 9 3 30	—0.7470	.5238	—.1708	—9.1573	.9955
7	50 Virginis	6	+75	— 2	13 33.9	+ 9 39 18	+0.6276	.5241	—.1703	—9.2225	.9939
7	58 Virginis	6	+43	—27	17 31.7	—10 29 53	+0.2053	.5256	—.1677	—9.2324	.9936
7	α Virginis	1	+46	—24	21 28.4	— 6 40 14	+0.2287	.5271	—.1647	—9.2587	.9927
8	86 Virginis	6	+30	—38	7 56.0	+ 3 28 24	—0.0400	.5320	—.1563	—9.3088	.9908
9	5 Libræ	6	—14	—90	13 3.1	+ 7 40 28	—0.7495	.5476	—.1246	—9.4098	.9852
9	8 Libræ	6	+ 4	—64	15 16.0	+ 9 49 7	—0.4364	.5489	—.1217	—9.4251	.9841
9	α²Libræ	2½	+ 6	—62	15 21.4	+ 9 54 20	—0.3992	.5488	—.1216	—9.4263	.9840
9	ν¹ Libræ	5	—30	—90	22 40.3	— 7 1 19	—0.9784	.5534	—.1113	—9.4331	.9834
9	ν² Libræ	6½	—15	—90	22 45.3	— 6 56 27	—0.7437	.5536	—.1112	—9.4393	.9830
10	JUPITER		+ 4	—62	1 59.9	— 3 48 22	—0.3993	.5525	—.1056	—9.4561	.9815
10	28 Libræ	6	+49	—14	5 9.9	— 0 44 45	+0.3939	.5576	—.1019	—9.4820	.9790
10	41 Libræ	6	+71	+16	13 14.9	+ 7 3 38	+0.8806	.5626	—.0891	—9.5093	.9761
10	κ Libræ	5	+71	+40	14 36.2	+ 8 22 7	+1.1682	.5638	—.0867	—9.5177	.9751
11	β¹ Scorpii	2	+57	— 4	0 56.0	— 5 39 46	+0.5621	.5700	—.0690	—9.5220	.9745
11	β² Scorpii	5½	+59	— 4	0 56.2	— 5 39 34	+0.5589	.5700	—.0690	—9.5219	.9745
11	ν¹ Scorpii	7	+23	—35	3 46.9	— 2 54 58	+0.0196	.5717	—.0637	—9.5147	.9754
11	ν²Scorpii	4	+23	—34	3 47.3	— 2 54 35	+0.0293	.5719	—.0637	—9.5149	.9754
11	B.A.C. 5408	6½	—38	—90	4 57.9	— 1 46 29	—1.0127	.5725	—.0616	—9.4942	.9778
11	ψ Ophiuchi	5	+42	—16	8 59.2	+ 2 6 7	+0.3631	.5749	—.0541	—9.5281	.9738
11	B.A.C. 5663	6½	+37	—17	21 22.8	— 9 57 27	+0.3299	.5821	—.0294	—9.5380	.9725
11	B.A.C. 5700	6½	—16	—82	22 55.3	— 8 28 24	—0.6104	.5825	—.0265	—9.5197	.9748
12	ξ O phiuchi	5	+69	+19	8 46.5	+ 1 0 38	+0.9230	0.5876	—.0058	—9.5536	9.9702

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Aug. 12	B.A.C. 6060	6½	−57	−90	23 2.8	− 9 15 50	−1.1817	0.5936	+.0251	−9.5076	9.9763
13	B.A.C. 6081	6½	+45	−11	0 39.4	− 7 42 56	+0.4437	.5940	+.0288	−9.5408	.9721
13	B.A.C. 6098	6	+70	+17	1 42.0	− 6 42 42	+0.8886	.5946	+.0311	−9.5490	.9709
13	15 Sagittarii	5	+70	+34	6 45.2	− 1 51 17	+1.1015	.5961	+.0422	−9.5497	.9708
13	16 Sagittarii	6	+70	+ 8	6 45.9	− 1 50 37	+0.7570	.5961	+.0423	−9.5427	.9718
13	21 Sagittarii	5	+70	+37	10 48.6	+ 2 2 37	+1.1311	.5970	+.0512	−9.5465	.9713
13	B.A.C. 6287	6	−12	−78	12 47.0	+ 3 56 24	−0.5828	.5974	+.0555	−9.5084	.9761
13	B.A.C. 6292	6	0	−60	13 14.2	+ 4 22 34	−0.3745	.5976	+.0563	−9.5125	.9757
13	B.A.C. 6293	6½	−39	−90	13 16.7	+ 4 24 57	−1.0172	.5976	+.0564	−9.4982	.9773
13	B.A.C. 6294	6	−29	−90	13 17.3	+ 4 25 31	−0.8750	.5976	+.0564	−9.5012	.9770
13	B.A.C. 6299	7	+13	−44	13 27.2	+ 4 34 59	−0.1334	.5977	+.0572	−9.5174	.9751
13	B.A.C. 6301	7	+ 5	−53	13 41.5	+ 4 48 46	−0.2736	.5977	+.0576	−9.5140	.9755
14	B.A.C. 6536	6½	+71	+44	3 54.1	− 5 32 7	+1.1956	.5999	+.0883	−9.5234	.9743
14	*d* Sagittarii	5	+71	+49	7 37.0	− 1 58 3	+1.2274	.6002	+.0964	−9.5167	.9752
14	ϱ^1 Sagittarii	4	+41	−19	9 14.4	− 0 24 28	+0.2965	.6002	+.0996	−9.4922	.9780
14	ϱ^2 Sagittarii	5½	+72	+ 7	9 17.6	− 0 21 35	+0.7577	.6002	+.0995	−9.5027	.9768
14	B.A.C. 6658	6	+72	+31	11 45.9	+ 2 1 1	+1.0827	.6002	+.1049	−9.5043	.9766
14	e^1 Sagittarii	5½	+ 5	−60	16 48.8	+ 6 52 1	−0.3815	.6002	+.1149	−9.4558	.9815
14	e^2 Sagittarii	5	+ 1	−66	17 31.7	+ 7 33 18	−0.4598	.6002	+.1166	−9.4517	.9819
14	B.A.C. 6746	6	−37	−90	17 56.8	+ 7 57 24	−1.0619	.6001	+.1173	−9.4345	.9833
14	*q* Sagittarii	5½	+11	−54	23 40.0	−10 22 56	−0.2947	.5999	+.1285	−9.4363	.9832
15	B.A.C. 6992	6½	+47	−18	8 45.4	− 1 48 53	+0.3195	.5988	+.1450	−9.4187	.9845
15	β Capricor.	3	+48	−18	8 51.1	− 1 43 29	+0.3308	.5988	+.1451	−9.4186	.9845
15	B.A.C. 7221	6½	+33	−34	20 45.8	+ 9 43 24	+0.0464	.5966	+.1645	−9.3534	.9886
15	B.A.C. 7242	6	−10	−90	21 44.7	+10 40 1	−0.7311	.5965	+.1660	−9.3207	.9903
16	8 Aquarii	6	+77	+40	0 28.3	−10 42 44	+1.1896	.5961	+.1701	−9.3704	.9877
16	ν Aquarii	4½	+46	−23	4 23.7	− 6 56 28	+0.2420	.5950	+.1756	−9.3148	.9905
16	17 Aquarii	6	−10	−90	9 50.2	− 1 42 33	−0.7651	.5938	+.1824	−9.2349	.9935
16	19 Aquarii	6	+23	−47	10 45.1	− 0 49 43	−0.1788	.5936	+.1834	−9.2532	.9929
16	ξ Aquarii	4½	−28	−90	15 52.3	+ 4 5 54	−1.0476	.5924	+.1892	−9.1675	.9952
16	c^1 Capricor.	6	+80	+ 4	18 49.5	+ 6 56 9	+0.7320	.5914	+.1923	−9.2265	.9937
16	c^2 Capricor.	6½	+80	+24	19 20.4	+ 7 25 52	+1.0231	.5914	+.1927	−9.2351	.9935
17	30 Aquarii	5½	+20	−52	2 20.9	− 9 49 35	−0.2662	.5894	+.1989	−9.0964	.9966
17	44 Aquarii	6	+24	−48	8 4.2	− 3 19 16	−0.2031	.5880	+.2032	−9.0234	.9976
17	51 Aquarii	6	+28	−44	10 58.4	− 1 31 37	−0.1391	.5874	+.2051	−8.9829	.9980
17	κ Aquarii	5	+64	−11	16 30.1	+ 3 56 23	+0.4521	.5859	+.2080	−8.9335	9.9984
18	B.A.C. 8152	6½	+43	−29	11 51.9	− 1 33 29	+0.1201	.5816	+.2118	−7.8941	0.0000
18	κ Piscium	4½	+ 7	−70	13 18.4	− 0 10 13	−0.5248	.5812	+.2117	+7.9567	.0000
18	9 Piscium	6	+16	−58	13 26.4	− 0 2 27	−0.3633	.5812	+.2117	+7.8251	.0000
18	15 Piscium	6½	+47	−26	16 55.7	+ 3 19 10	+0.1922	.5805	+.2113	+7.9965	0.0000
18	16 Piscium	6	+ 9	−68	17 19.2	+ 3 41 47	−0.4986	.5805	+.2113	+8.3738	9.9999
18	λ Piscium	5	+55	−19	19 43.1	+ 6 0 25	+0.3183	.5798	+.2107	+8.2585	.9999
18	19 Piscium	6	−19	−87	21 33.6	+ 7 46 51	−0.9694	.5796	+.2102	+8.6794	.9995
18	B.A.C. 8276	6½	+68	− 9	22 35.0	+ 8 46 2	+0.4990	.5793	+.2099	+8.4085	.9999
18	22 Piscium	6	+40	−32	23 55.2	+10 2 20	+0.0756	.5793	+.2096	+8.5807	.9997
19	25 Piscium	6½	+90	+22	0 23.5	+10 30 35	+1.0025	.5790	+.2093	+8.3696	.9999
19	51 Piscium	6½	+14	−60	17 9.1	+ 2 39 38	−0.4028	.5769	+.2005	+9.0342	.9975
19	60 Piscium	6	+90	+33	23 38.7	+ 8 55 10	+1.1231	.5761	+.1953	+9.0195	.9976
19	62 Piscium	6	+81	0	23 56.9	+ 9 12 42	+0.6250	.5761	+.1951	+9.0581	.9972
20	δ Piscium	4½	+59	−14	0 6.9	+ 9 22 26	+0.3725	.5761	+.1950	+9.0766	.9969
20	ε Piscium	4	+90	+46	6 14.3	− 8 43 26	+1.2397	.5754	+.1894	+9.0959	.9966
20	π Piscium	6	+14	−57	20 52.3	+ 5 22 55	−0.4058	.5744	+.1731	+9.2978	.9913
21	29 Arietis	6½	+56	−11	20 50.2	+ 4 29 11	+0.3197	.5733	+.1391	+9.3966	.9861
22	ο Arietis	6½	+90	+10	1 51.0	+ 9 19 14	+0.6893	.5732	+.1311	+9.4055	.9855
22	π Arietis	5½	−56	−73	3 51.5	+11 15 25	−1.2767	0.5732	+.1278	+9.4634	9.9808

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Aug. 22	σ Arietis	6	+90	+66	4 50.7	—11 47 34	+1.2957	0.5731	+.1261	+9.3993	9.9859
22	53 Arietis	6	—10	—73	11 40.3	— 5 12 33	—0.8043	.5725	+.1145	+9.4747	.9798
22	B.A.C. 1096	6½	+59	— 4	23 12.2	+ 5 54 36	+0.3663	.5717	+.0943	+9.4753	.9797
23	13 Tauri	6½	—59	—71	2 43.1	+ 9 17 57	—1.2741	.5714	+.0877	+9.5184	.9750
23	Mars		+44	—14	8 45.2	— 8 52 49	+0.1425	.5488	+.0710	+9.4988	.9773
23	B.A.C. 1240	6½	+90	+29	10 46.1	— 6 56 9	+0.8949	.5703	+.0728	+9.4855	.9787
23	ω^1 Tauri	6	+15	—43	14 22.6	— 3 27 23	—0.3658	.5699	+.0658	+9.5180	.9750
23	ω^2 Tauri	5½	—45	—70	17 53.6	— 0 3 51	—1.1937	.5694	+.0594	+9.5390	.9723
23	B.A.C. 1361	6	+80	+12	21 16.7	+ 3 12 8	+0.5936	.5689	+.0531	+9.5066	.9764
23	ε Tauri	3½	+72	+ 8	22 52.7	+ 4 44 42	+0.5192	.5687	+.0499	+9.5099	.9760
24	B.A.C. 1468	6	+90	+69	6 38.5	—11 45 51	+1.2671	.5672	+.0349	+9.5011	.9770
24	*i* Tauri	5½	+90	+61	8 53.1	— 9 36 2	+1.2156	.5669	+.0308	+9.5038	.9767
24	B.A.C. 1563	6½	+55	— 1	15 7.5	— 3 34 39	+0.2972	.5656	+.0190	+9.5260	.9740
24	*l* Tauri	5½	+16	—37	16 7.2	— 2 37 6	—0.3466	.5652	+.0172	+9.5389	.9723
24	B.A.C. 1651	6½	+56	+ 2	21 58.4	+ 3 1 59	+0.3231	.5639	+.0060	+9.5271	.9739
25	ζ Tauri	3½	—43	—69	5 24.8	+10 13 0	—1.1711	.5618	—.0082	+9.5554	.9700
25	B.A.C. 1835	6½	—24	—69	10 15.2	— 9 6 32	—0.9777	.5607	—.0167	+9.5507	.9707
25	χ^1 Orionis	4½	+12	—42	13 0.2	— 6 27 14	—0.4161	.5598	—.0219	+9.5392	.9723
25	χ^2 Orionis	6	+45	— 9	13 15.6	— 6 12 18	+0.1477	.5598	—.0222	+9.5282	.9738
25	χ^3 Orionis	5	+41	—13	17 7.7	— 2 28 3	+0.0815	.5585	—.0292	+9.5275	.9739
25	χ^4 Orionis	5	+13	—43	17 19.6	— 2 16 33	—0.4103	.5585	—.0295	+9.5369	.9726
25	68 Orionis	6	+25	—29	21 2.3	+ 1 18 33	—0.1856	.5572	—.0362	+9.5302	.9735
25	71 Orionis	5½	+65	+ 5	22 21.4	+ 2 35 0	+0.4352	.5567	—.0384	+9.5170	.9751
26	ν Geminor.	4½	—29	—70	4 49.2	+ 8 49 50	—1.0414	.5548	—.0499	+9.5401	.9722
27	λ Geminor.	3½	+90	+52	4 0.8	+ 7 15 51	+1.1940	.5461	—.0872	+9.4604	.9811
27	B.A.C. 2432	6½	—19	—72	6 21.4	+ 9 31 58	—0.9317	.5455	—.0906	+9.5022	.9769
27	68 Geminor.	5½	+90	+55	11 29.2	— 9 30 6	+1.2342	.5434	—.0984	+9.4433	.9826
27	*f* Geminor.	6	—32	—72	14 16.8	— 6 47 46	—1.0950	.5424	—.1021	+9.4894	.9782
27	1 Cancri	6	+35	—27	22 53.2	+ 1 32 26	—0.0118	.5393	—.1138	+9.4442	.9825
28	5 Cancri	6	—25	—73	1 5.5	+ 3 40 33	—1.0123	.5384	—.1166	+9.4616	.9810
28	29 Cancri	6	+19	—47	14 39.4	— 7 10 35	—0.3149	.5335	—.1331	+9.4031	.9856
28	B.A.C. 2872	6½	+59	— 9	17 15.7	— 4 39 1	+0.3715	.5326	—.1359	+9.3750	.9874
28	A^1 Cancri	6	+56	—13	22 3.7	+ 0 0 20	+0.3202	.5309	—.1411	+9.3574	.9884
28	A^2 Cancri	6	+86	+ 6	23 58.6	+ 1 51 42	+0.6690	.5304	—.1431	+9.3388	.9894
29	60 Cancri	6	+70	— 3	4 34.6	+ 6 19 29	+0.5134	.5288	—.1477	+9.3229	.9902
29	α Cancri	4	+39	—28	5 52.9	+ 7 35 26	+0.0556	.5283	—.1489	+9.3312	.9898
29	κ Cancri	5	+81	+ 3	10 40.7	—11 45 22	+0.6272	.5271	—.1534	+9.2888	.9916
29	B.A.C. 3122	6½	+ 7	—65	11 42.5	—10 45 22	—0.5331	.5266	—.1543	+9.3219	.9902
29	ω Leonis	6	+85	+ 4	21 27.7	— 1 17 20	+0.6647	.5238	—.1623	+9.2241	.9938
Sept. 2	Mercury		+62	—11	22 16.6	— 3 13 50	+0.4451	.4967	—.1621	—9.0119	.9977
3	*f* Virginis	6	—35	—90	2 9.2	+ 0 32 7	—1.1492	.5206	—.1787	—8.9478	.9983
3	χ Virginis	5	+83	+23	3 26.7	+ 1 47 19	+1.0111	.5208	—.1781	—9.1011	.9965
3	B.A.C. 4259	6	+83	+25	3 30.8	+ 1 51 21	+1.0399	.5209	—.1781	—9.1032	.9965
3	28 Virginis	6	+47	—30	4 52.0	+ 3 10 10	+0.2108	.5213	—.1775	—9.0705	.9970
3	ψ Virginis	5	+81	+62	11 20.8	+ 9 27 40	+1.3323	.5229	—.1742	—9.1849	.9949
3	B.A.C. 4394	5½	+ 4	—71	18 43.4	— 7 22 43	—0.5365	.5252	—.1696	—9.1573	.9955
3	50 Virginis	6	+81	+10	19 20.3	— 6 46 51	+0.8437	.5253	—.1694	—9.2224	.9939
3	58 Virginis	6	+59	—13	23 18.6	— 2 55 33	+0.4249	.5265	—.1667	—9.2324	.9936
4	α Virginis	1	+61	—11	3 16.0	+ 0 54 45	+0.4534	.5278	—.1637	—9.2587	.9927
4	*h* Virginis	5	—53	—90	7 14.4	+ 4 46 4	—1.2747	.5293	—.1606	—9.2160	.9940
4	86 Virginis	6	+43	—25	13 46.5	+11 6 19	+0.1951	.5317	—.1550	—9.3088	.9908
5	λ Virginis	4½	—40	—90	6 13.8	+ 3 3 12	—1.1353	.5410	—.1393	—9.3437	.9892
5	5 Libræ	6	+ 1	—69	19 11.3	— 8 23 50	—0.4989	.5449	—.1233	—9.4098	.9852
5	8 Libræ	6	+17	—47	21 26.3	— 6 13 11	—0.1821	.5460	—.1201	—9.4251	.9841
5	α^2 Libræ	2½	+19	—44	21 31.7	— 6 7 58	—0.1445	0.5461	—.1201	—9.4262	9.9840

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. *H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Sept. 6	ν^1 Libræ	5	—14	—90	4 57.8	+ 1 3 44	—0.7268	0.5497	—.1101	—9.4330	9.9834
6	ν^2 Libræ	6½	— 1	—69	5 3.1	+ 1 8 47	—0.4905	.5497	—.1100	—9.4393	.9830
6	28 Libræ	6	+69	+ 1	11 34.7	+ 7 27 31	+0.6599	.5531	—.1004	—9.4820	.9790
6	JUPITER		+40	—21	14 3.3	+ 9 51 11	+0.2612	.5484	—.0952	—9.4786	.9794
6	ζ^1 Libræ	4	—53	—90	15 0.6	+10 46 34	—1.2042	.5547	—.0955	—9.4467	.9823
6	ζ^2 Libræ	7	— 1	—68	15 36.6	+11 21 26	—0.4782	.5551	—.0944	—9.4651	.9807
6	B.A.C. 5099	7	—14	—90	15 53.4	+11 37 38	—0.7013	.5553	—.0941	—9.4605	.9811
6	ζ Libræ	6	—59	—90	17 9.2	—11 9 7	—1.2439	.5558	—.0922	—9.4505	.9820
6	41 Libræ	6	+71	+39	19 50.0	— 8 33 41	+1.1532	.5573	—.0879	—9.5093	.9761
7	β^1 Scorpii	2	+71	+13	7 48.2	+ 3 0 0	+0.8306	.5632	—.0680	—9.5220	.9745
7	β^2 Scorpii	5½	+71	+13	7 48.4	+ 3 0 14	+0.8272	.5632	—.0680	—9.5219	.9745
7	ν^1 Scorpii	7	+38	—20	10 43.6	+ 5 49 18	+0.2807	.5649	—.0630	—9.5147	.9754
7	ν^2 Scorpii	4	+38	—19	10 44.0	+ 5 49 44	+0.2905	.5649	—.0630	—9.5149	.9754
7	B.A.C. 5408	6½	—22	—90	11 56.5	+ 6 59 44	—0.7652	.5652	—.0609	—9.4942	.9778
7	ψ Ophiuchi	5	+62	0	16 4.5	+10 59 4	+0.6270	.5674	—.0536	—9.5281	.9738
7	χ Ophiuchi	6	—47	—90	17 23.8	—11 44 29	—1.1064	.5681	—.0509	—9.4934	.9778
8	B A.C. 5663	6½	+56	— 2	4 50.4	— 0 42 12	+0.5876	.5733	—.0296	—9.5380	.9725
8	B.A.C. 5700	6½	+ 3	—59	6 25.8	+ 0 49 44	—0.3670	.5740	—.0263	—9.5197	.9748
8	29 Ophiuchi	6	—48	—90	8 30.4	+ 2 49 53	—1.0892	.5749	—.0223	—9.5056	.9765
8	ξ Ophiuchi	5	+69	+44	16 36.3	+10 38 7	+1.1820	.5780	—.0063	—9.5536	.9702
9	B.A.C. 6060	6½	—39	—90	7 21.9	+ 0 51 5	—0.9669	.5833	+.0241	—9.5076	.9763
9	B.A.C. 6081	6½	+65	+ 3	9 1.9	+ 2 27 24	+0.6803	.5836	+.0271	—9.5408	.9721
9	B.A.C. 6098	6	+70	+38	10 6.7	+ 3 29 50	+1.1311	.5841	+.0294	—9.5490	.9709
9	16 Sagittarii	6	+70	+25	15 21.3	+ 8 32 37	+0.9917	.5853	+.0401	—9.5428	.9718
9	B.A.C. 6287	6	0	—60	21 35.1	— 9 27 37	—0.3765	.5869	+.0535	—9.5085	.9761
9	B A.C. 6292	6	+11	—46	22 3.3	— 9 0 31	—0.1659	.5870	+.0542	—9.5125	.9757
9	B.A.C. 6293	6½	—26	—90	22 5.8	— 8 58 2	—0.8183	.5871	+.0542	—9.4982	.9773
9	B.A.C. 6294	6	—17	—90	22 6.5	— 8 57 27	—0.6741	.5871	+.0542	—9.5013	.9770
9	B.A.C. 6299	7	+25	—31	22 6.6	— 8 57 38	+0.0787	.5871	+.0545	—9.5174	.9751
9	B.A.C. 6301	7	+17	—40	22 31.5	— 8 33 20	—0.0640	.5872	+.0554	—9.5141	.9755
10	ϱ^1 Sagittarii	4	+54	— 9	18 44.4	+10 53 34	+0.4851	.5901	+.0964	—9.4922	.9780
10	ϱ^2 Sagittarii	5½	+72	+19	18 47.6	+10 56 37	+0.9526	.5901	+.0965	—9.5027	.9768
11	e^1 Sagittarii	5½	+14	—49	2 33.3	— 5 35 25	—0.2156	.5905	+.1116	—9.4558	.9815
11	e^2 Sagittarii	5	+10	—54	3 17.6	— 4 52 47	—0.2963	.5907	+.1127	—9.4517	.9819
11	B.A.C. 6746	6	—26	—90	3 43.5	— 4 27 55	—0.9074	.5908	+.1138	—9.4345	.9833
11	*g* Sagittarii	5½	+19	—44	9 36.9	+ 1 12 2	—0.1374	.5909	+.1247	—9.4363	.9832
11	B.A.C. 6992	6½	+56	—11	18 57.4	+10 11 14	+0.4632	.5908	+.1409	—9.4188	.9845
11	β Capricor.	3	+58	— 9	19 3.2	+10 16 46	+0.4745	.5907	+.1410	—9.4186	.9845
12	B.A.C. 7221	6½	+40	—27	7 15.0	— 1 59 13	+0.1638	.5902	+.1603	—9.3534	.9886
12	B.A.C. 7242	6	— 4	—81	8 15.2	— 1 1 20	—0.6260	.5899	+.1618	—9.3207	.9903
12	8 Aquarii	6	+77	+59	11 2.1	+ 1 39 15	+1.3059	.5899	+.1659	—9.3704	.9877
12	ν Aquarii	4½	+52	—17	15 2.0	+ 5 30 0	+0.3404	.5895	+.1714	—9.3148	.9905
12	17 Aquarii	6	— 5	—88	20 34.0	+10 49 28	—0.6869	.5890	+.1786	—9.2349	.9935
12	19 Aquarii	6	+27	—42	21 29.8	+11 43 9	—0.0987	.5890	+.1798	—9.2532	.9929
13	ξ Aquarii	4½	—24	—90	2 41.3	— 7 17 6	—0.9851	.5886	+.1856	—9.1675	.9952
13	c^1 Capricor.	6	+81	+ 9	5 40.6	— 4 24 33	+0.7976	.5884	+.1888	—9.2265	.9937
13	c^2 Capricor.	6½	+80	+29	6 11.8	— 3 54 30	+1.0884	.5882	+.1892	—9.2351	.9935
13	30 Aquarii	5½	+22	—49	13 16.2	+ 2 53 55	—0.2246	.5878	+.1958	—9.0964	.9966
13	44 Aquarii	6	+25	—46	19 1.5	+ 8 26 18	—0.1753	.5870	+.2003	—9.0234	.9976
13	51 Aquarii	6	+28	—43	21 56.4	+11 14 38	—0.1184	.5867	+.2023	—8.9828	.9980
14	κ Aquarii	5	+64	—11	3 37.7	— 7 16 49	+0.4588	.5863	+.2056	—8.9334	9.9984
14	B.A.C. 8152	6½	+40	—32	22 45.1	+11 7 53	+0.0776	.5849	+.2106	—7.8936	0.0000
15	κ Piscium	4½	+ 5	—74	0 10.7	—11 29 41	—0.5686	.5848	+.2106	+7.9572	.0000
15	η Piscium	6	+14	—61	0 18.6	—11 22 0	—0.4081	.5848	+.2106	+7.8259	.0000
15	Piscium	6½	+44	—28	3 45.6	— 8 2 41	+0.1368	0.5848	+.2105	+7.9970	0.0000

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Sept. 15	16 Piscium	6	+ 6	—72	4 8.9	— 7 40 19	—0.5520	0.5848	+.2103	+8.1057	9.9999
15	λ Piscium	5	+51	—22	6 30.9	— 5 23 32	+0.2552	.5845	+.2100	+8.2587	.9999
15	19 Piscium	6	—24	—87	8 19.9	— 3 38 35	—1.0299	.5845	+.2097	+8.6796	.9995
15	B.A.C. 8276	6½	+62	—12	9 20.5	— 2 40 17	+0.4279	.5845	+.2094	+8.4087	.9999
15	22 Piscium	6	+36	—36	10 39.5	— 1 24 7	+0.0038	.5845	+.2090	+8.5808	.9997
15	25 Piscium	6½	+90	+17	11 7.4	— 0 57 19	+0.9241	.5845	+.2090	+8.3698	.9999
16	51 Piscium	6½	+10	—65	3 34.4	— 9 6 49	—0.4764	.5843	+.2008	+9.0343	.9975
16	60 Piscium	6	+90	+22	9 51.0	— 3 4 12	+0.9743	.5843	+.1961	+9.0196	.9976
16	62 Piscium	6	+68	— 7	10 13.0	— 2 43 3	+0.4942	.5843	+.1959	+9.0582	.9972
16	δ Piscium	4½	+50	—21	10 22.8	— 2 33 33	+0.2439	.5843	+.1956	+9.0766	.9969
16	ε Piscium	4	+90	+31	16 21.1	+ 3 11 28	+1.0894	.5843	+.1903	+9.0959	.9966
17	π Piscium	6	+ 5	—68	6 35.1	— 7 6 17	—0.5634	.5842	+.1742	+9 2978	.9913
18	29 Arietis	6½	+43	—22	5 49.2	— 8 43 51	+0.1186	.5837	+.1404	+9.3967	.9861
18	σ Arietis	6	+90	+37	13 34.6	— 1 15 45	+1.0708	.5817	+.1272	+9.3993	.9859
18	53 Arietis	6	—25	—73	20 11.5	+ 5 6 26	—1.0044	.5828	+.1159	+9.4747	.9798
19	B.A.C. 1096	6½	+44	—16	7 22.2	— 8 7 40	+0.1401	.5814	+.0949	+9.4753	.9797
19	B.A.C. 1240	6½	+86	+14	18 35.8	+ 2 41 15	+0.6546	.5796	+.0734	+9.4855	.9787
19	ω^1 Tauri	6	+ 2	—60	22 6.2	+ 6 3 58	—0.5901	.5788	+.0668	+9.5180	.9750
20	B.A.C. 1361	6	+58	— 1	4 49.2	—11 27 46	+0.3540	.5773	+.0534	+9.5066	.9764
20	ε Tauri	3½	+53	— 5	6 22.6	— 9 57 41	+0.2800	.5769	+.0501	+9.5099	.9760
20	B.A.C. 1468	6	+90	+41	13 56.8	— 2 39 57	+1.0165	.5748	+.0355	+9.5011	.9770
20	*i* Tauri	5½	+90	+38	16 8.1	— 0 33 22	+0.9656	.5741	+.0313	+9.5038	.9767
20	B A.C. 1563	6½	+39	—14	22 14.0	+ 5 19 26	+0.0586	.5721	+.0194	+9.5260	.9740
20	*l* Tauri	5½	+ 3	—55	23 12.3	+ 6 15 42	—0.5776	.5719	+.0175	+9.5389	.9723
21	B.A.C. 1651	6½	+41	—11	4 56.2	+11 47 22	+0.0846	.5698	+.0062	+9.5271	.9739
21	B.A.C. 1733	6½	— 2	—61	10 29.3	— 6 51 20	—0.6546	.5678	—.0045	+9.5418	.9720
21	B.A.C. 1835	6½	—47	—69	16 59.3	— 0 34 54	—1.2003	.5652	—.0166	+9.5507	.9707
21	χ^1 Orionis	4½	— 1	—61	19 41.5	+ 2 1 42	—0.6442	.5640	—.0217	+9.5392	.9723
21	χ^2 Orionis	6	+31	—22	19 56.7	+ 2 16 22	—0.0856	.5640	—.0221	+9.5282	.9738
21	χ^3 Orionis	5	+27	—26	23 45.3	+ 5 57 0	—0.1498	.5623	—.0291	+9.5275	.9739
21	χ^4 Orionis	5	— 1	—61	23 57.0	+ 6 8 20	—0.6369	.5623	—.0294	+9.5369	.9726
22	68 Orionis	6	+12	—44	3 36.4	+ 9 40 13	—0.4132	.5608	—.0361	+9.5302	.9735
22	71 Orionis	5½	+48	— 8	4 54.4	+10 55 33	+0.2030	.5604	—.0383	+9.5170	.9751
22	ν Geminor.	4½	—58	—70	11 17.3	— 6 54 36	—1.2589	.5576	—.0493	+9.5401	.9722
22	26 Geminor.	5½	+90	+48	17 31.8	— 0 52 35	+1.1207	.5545	—.0601	+9.4847	.9787
23	λ Geminor.	3½	+90	+33	10 16.5	— 8 40 56	+0.9770	.5471	—.0863	+9.4605	.9811
23	B.A.C. 2432	6½	—37	—72	12 36.3	— 6 25 39	—1.1347	.5460	—.0900	+9.5022	.9769
23	63 Geminor.	5½	+90	+35	17 42.6	— 1 29 15	+1.0247	.5438	—.0973	+9.4434	.9826
23	*f* Geminor.	6	—64	—72	20 29.5	+ 1 12 23	—1.2969	.5425	—.1012	+9.4895	.9782
24	1 Cancri.	6	+24	—38	5 4.3	+ 9 30 55	—0.2039	.5389	—.1125	+9.4442	.9825
24	5 Cancri	6	—43	—73	7 16.2	+11 38 43	—1.1984	.5379	—.1152	+9.4616	.9810
24	29 Cancri	6	+ 9	—59	20 49.2	+ 0 46 39	—0.4877	.5325	—.1315	+9.4031	.9856
24	B.A.C. 2872	6½	+48	—18	23 25.5	+ 3 18 12	+0.2001	.5314	—.1344	+9.3750	.9874
25	A¹ Cancri	6	+45	—21	4 13.5	+ 7 57 30	+0.1553	.5299	—.1393	+9.3574	.9884
25	A² Cancri	6	+69	— 2	6 8.3	+ 9 48 55	+0.5059	.5293	—.1413	+9.3388	.9894
25	60 Cancri	6	+58	—11	10 44.5	— 9 43 8	+0.3573	.5275	—.1458	+9.3229	.9902
25	α Cancri	4	+30	—36	12 2.9	— 8 27 8	—0.0976	.5272	—.1470	+9.3312	.9898
25	κ Cancri	5	+67	— 5	16 50.9	— 3 47 41	+0.4797	.5258	—.1514	+9.2888	.9916
25	B.A.C. 3122	6½	— 2	—77	17 52.8	— 2 47 39	—0.6770	.5255	—.1523	+9.3219	.9902
26	ω Leonis	6	+71	— 3	3 38.6	+ 6 41 0	+0.5343	.5226	—.1603	+9.2241	.9938
26	*h* Leonis	6	+ 8	—64	5 28.2	+ 8 27 24	—0.4995	.5223	—.1617	+9.2528	.9929
26	B.A.C. 3407	6	—54	—81	19 17.8	— 2 6 56	—1.2093	.5195	—.1707	+9.1922	.9947
26	π Leonis	5	—39	—82	20 24.8	— 1 1 54	—1.1945	.5193	—.1715	+9.1793	.9950
26	14 Sextantis	6	+90	+16	23 56.7	+ 2 23 55	+0.8880	.5187	—.1733	+9.0383	.9974
27	16 Sextantis	6	+38	—32	1 14.7	+ 3 39 42	+0.0355	0.5186	—.1740	+9.0755	9.9969

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Sept. 27	B.A.C. 3529	6	—60	—83	7 16.0	+ 9 30 44	—1.3292	0.5177	—.1768	+9.0926	9.9966
27	34 Sextantis	6	+18	—54	19 8.4	— 2 57 6	—0.3211	.5167	—.1813	+8.8738	.9988
27	36 Sextantis	6	+81	0	20 30.4	— 1 37 25	+0.6422	.5167	—.1818	+8.7466	.9993
28	p^3 Leonis	6	—18	—88	8 13.5	+ 9 45 47	—0.9386	.5166	—.1843	+8.6714	9.9995
28	p^5 Leonis	5	+80	— 1	11 53.9	—10 40 3	+0.6304	.5166	—.1848	+8.0656	0.0000
Oct. 1	86 Virginis	6	+49	—19	19 26.1	— 5 26 43	+0.2972	.5351	—.1545	—9.3088	9.9908
2	λ Virginis	4½	—29	—90	11 47.3	+10 24 9	—1.0076	.5417	—.1381	—9.3437	.9892
3	5 Libræ	6	+ 8	—58	0 41.7	— 1 6 5	—0.3628	.5475	—.1226	—9.4098	.9852
3	8 Libræ	6	+25	—38	2 56.3	+ 1 4 12	—0.0437	.5484	—.1197	—9.4250	.9841
3	α^2 Libræ	2½	+27	—36	3 1.7	+ 1 9 23	—0.0059	.5484	—.1196	—9.4262	.9840
3	ν^1 Libræ	5	— 6	—77	10 27.1	+ 8 20 19	—0.5826	.5517	—.1094	—9.4330	.9834
3	ν^2 Libræ	6½	+ 7	—57	10 32.3	+ 8 25 20	—0.3454	.5517	—.1093	—9.4392	.9830
3	28 Libræ	6	+73	+11	17 4.0	— 9 15 49	+0.8128	.5545	—.1000	—9.4820	.9790
3	ζ^1 Libræ	4	—38	—90	20 30.0	— 5 56 38	—1.0539	.5560	—.0946	—9.4467	.9823
3	ζ^2 Libræ	7	+ 7	—56	21 6.2	— 5 21 41	—0.3255	.5563	—.0939	—9.4651	.9807
3	B.A.C. 5099	7	— 6	—74	21 23.0	— 5 5 27	—0.5490	.5564	—.0932	—9.4605	.9811
3	ζ^3 Libræ	6	—62	—90	21 37.0	— 4 51 53	—1.2647	.5565	—.0929	—9.4440	.9826
3	ζ^4 Libræ	6	—42	—90	22 38.9	— 3 52 4	—1.0924	.5569	—.0913	—9.4505	.9820
4	JUPITER		+72	+20	4 7.1	+ 1 25 7	+0.9376	.5512	—.0809	—9.5065	.9764
4	β^1 Scorpii	2	+71	+25	13 21.8	+10 20 59	+0.9991	.5629	—.0676	—9.5220	.9745
4	β^2 Scorpii	5½	+71	+25	13 22.0	+10 21 10	+0.9959	.5629	—.0676	—9.5219	.9745
4	ν^1 Scorpii	7	+49	—10	16 18.5	—10 48 25	+0.4482	.5639	—.0625	—9.5147	.9754
4	ν^2 Scorpii	4	+49	—10	16 18.9	—10 48 0	+0.4581	.5639	—.0625	—9.5149	.9754
4	B.A.C. 5408	6½	—12	—80	17 32.0	— 9 37 25	—0.6030	.5645	—.0600	—9.4942	.9778
4	ψ Ophiuchi	5	+71	+11	21 42.2	— 5 35 54	+0.7993	.5661	—.0527	—9.5281	.9738
4	χ Ophiuchi	6	—34	—90	23 2.2	— 4 18 39	—0.9443	.5664	—.0505	—9.4934	.9778
5	B.A.C. 5663	6½	+70	+ 9	10 37.0	+ 6 51 51	+0.7651	.5703	—.0289	—9.5380	.9725
5	B.A.C. 5700	6½	+ 7	—48	12 13.8	+ 8 25 10	—0.1968	.5708	—.0262	—9.5197	.9748
5	29 Ophiuchi	6	—36	—90	14 20.2	+10 27 7	—0.9249	.5713	—.0223	—9.5056	.9765
6	B.A.C. 6060	6½	—28	—90	13 38.5	+ 8 55 13	—0.8041	.5773	+.0236	—9.5076	.9763
6	B.A.C. 6081	6½	+70	+15	15 20.9	+10 33 54	+0.8642	.5774	+.0267	—9.5408	.9721
6	16 Sagittarii	6	+70	+44	21 49.9	— 7 11 16	+1.1787	.5782	+.0398	—9.5427	.9718
7	B.A.C. 6267	6	—60	—90	3 18.1	— 1 55 3	—1.2238	.5789	+.0504	—9.4872	.9785
7	B.A.C. 6287	6	+ 9	—48	4 13.9	— 1 1 16	—0.2084	.5789	+.0522	—9.5084	.9761
7	B.A.C. 6292	6	+20	—35	4 42.9	— 0 33 21	+0.0049	.5790	+.0534	—9.5124	.9757
7	B.A.C. 6293	6½	—16	—87	4 45.5	— 0 30 48	—0.6564	.5790	+.0535	—9.4981	.9773
7	B.A.C. 6294	6	— 8	—71	4 46.2	— 0 30 11	—0.5101	.5790	+.0535	—9.5012	.9770
7	B.A.C. 6299	7	+35	—21	4 56.6	— 0 20 7	+0.2528	.5792	+.0538	—9.5173	.9751
7	B.A.C. 6301	7	+26	—30	5 11.9	— 0 5 22	+0.1081	.5792	+.0541	—9.5140	.9755
8	ϱ^1 Sagittarii	4	+68	+ 2	2 2.8	— 4 0 22	+0.6575	.5802	+.0941	—9.4922	.9780
8	ϱ^2 Sagittarii	5½	+72	+37	2 6.2	— 3 57 7	+1.1324	.5802	+.0942	—9.5027	.9768
8	ν Sagittarii	4½	—67	—90	2 6.8	— 3 56 34	—1.2800	.5802	+.0942	—9.4457	.9824
8	e^1 Sagittarii	5½	+22	—39	10 7.9	+ 3 46 52	—0.0590	.5804	+.1088	—9.4558	.9815
8	e^2 Sagittarii	5	+18	—44	10 53.7	+ 4 31 3	—0.1416	.5804	+.1102	—9.4517	.9819
8	B.A.C. 6746	6	—17	—90	11 20.5	+ 4 56 50	—0.7626	.5803	+.1108	—9.4345	.9833
8	g Sagittarii	5½	+28	—35	17 26.6	+10 49 28	+0.0156	.5802	+.1218	—9.4363	.9832
9	B.A.C. 6992	6½	+68	— 1	3 7.6	— 3 50 52	+0.6186	.5798	+.1374	—9.4187	.9845
9	β Capricor.	3	+69	0	3 13.5	— 3 45 6	+0.6301	.5798	+.1375	—9.4186	.9845
9	B.A.C. 7221	6½	+48	—19	15 52.4	+ 8 25 58	+0.3019	.5790	+.1564	—9.3534	.9886
9	B.A.C. 7242	6	+ 3	—69	16 54.7	+ 9 26 4	—0.5023	.5790	+.1579	—9.3207	.9903
9	ν Aquarii	4½	+61	—10	23 56.3	— 7 47 42	+0.4730	.5788	+.1671	—9.3148	.9905
10	17 Aquarii	6	+ 1	—75	5 40.2	— 2 16 22	—0.5778	.5784	+.1741	—9.2349	.9935
10	19 Aquarii	6	+33	—35	6 38.0	— 1 20 42	+0.0189	.5782	+.1752	—9.2532	.9929
10	ξ Aquarii	4½	—17	—90	12 0.3	+ 3 49 54	—0.8882	.5782	+.1810	—9.1675	.9952
10	c^1 Aquarii	6	+81	+17	15 5.7	+ 6 48 32	+0.9185	0.5782	+.1841	—9.2265	9.9937

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Oct. 10	c^2 Capricor.	6½	+80	+42	15 37.9	+ 7 19 38	+1.2131	0.5781	+.1848	—9.2351	9.9935
10	30 Aquarii	5½	+27	—43	22 56.2	— 9 38 3	—0.1300	.5781	+.1913	—9.0964	.9966
11	44 Aquarii	6	+30	—41	4 52.2	— 3 54 57	—0.0882	.5780	+.1958	—9.0234	.9976
11	51 Aquarii	6	+33	—38	7 52.3	— 1 1 24	—0.0347	.5781	+.1979	—8.9828	.9980
11	κ Aquarii	5	+70	— 6	13 43.1	+ 4 36 40	+0.5414	.5782	+.2013	—8.9334	9.9984
12	B.A.C. 8152	6½	+43	—29	9 17.1	— 0 31 52	+0.1244	.5793	+.2070	—7.9010	0.0000
12	κ Piscium	4½	+ 7	—70	10 44.4	+ 0 52 12	—0.5300	.5796	+.2071	+7.9507	.0000
12	9 Piscium	6	+16	—58	10 52.5	+ 1 0 0	—0.3682	.5796	+.2071	+7.8170	.0000
12	15 Piscium	6½	+46	—26	14 23.1	+ 4 23 0	+0.1760	.5800	+.2071	+7.9971	0.0000
12	16 Piscium	6	+ 7	—70	14 46.8	+ 4 45 46	—0.5192	.5800	+.2070	+8.3740	9.9999
12	λ Piscium	5	+53	—20	17 11.1	+ 7 4 51	+0.2909	.5800	+.2069	+8.2588	.9999
12	19 Piscium	6	—22	—87	19 1.8	+ 8 51 28	—1.0067	.5802	+.2065	+8 6797	.9995
12	B.A.C. 8276	6½	+65	—11	20 3.2	+ 9 50 39	+0.4599	.5804	+.2064	+8.4087	.9999
12	22 Piscium	6	+37	—34	21 23.4	+11 7 56	+0.0307	.5806	+.2060	+8.5809	.9997
12	25 Piscium	6½	+90	+19	21 51.6	+11 35 7	+0.9563	.5806	+.2060	+8.3699	.9999
13	51 Piscium	6½	+10	—65	14 28.0	+ 3 34 55	—0.4787	.5832	+.1988	+9.0343	.9975
13	60 Piscium	6	+90	+21	20 46.0	+ 9 39 0	+0.9661	.5841	+.1945	+9.0196	.9976
13	62 Piscium	6	+67	— 8	21 8.0	+10 0 11	+0.4844	.5841	+.1943	+9.0582	.9972
13	δ Piscium	4½	+49	—21	21 17.9	+10 9 42	+0.2332	.5844	+.1942	+9.0767	.9969
14	ε Piscium	4	+90	+30	3 16.4	— 8 5 4	+1.0700	.5851	+.1892	+9.0959	.9966
14	π Piscium	6	+ 2	—71	17 26.8	+ 5 33 38	—0.6030	.5875	+.1737	+9.2978	.9913
15	29 Arietis	6½	+38	—26	16 24.0	+ 3 39 4	+0.0475	.5901	+.1406	+9.3967	.9861
15	ο Arietis	6½	+61	— 6	21 10.3	+ 8 14 35	+0.3980	.5902	+.1329	+9.4056	.9855
16	σ Arietis	6	+90	+30	0 1.1	+10 58 52	+0.9845	.5903	+.1280	+9.3993	.9859
16	53 Arietis	6	—31	—73	6 30.0	— 6 46 52	—1.0812	.5907	+.1162	+9.4747	.9798
16	B.A.C. 1096	6½	+38	—22	17 25.7	+ 3 44 0	+0.0428	.5899	+.0954	+9.4754	.9797
17	B.A.C. 1240	6½	+73	+ 8	4 22.9	— 9 43 36	+0.5424	.5886	+.0736	+9.4856	.9787
17	ω^1 Tauri	6	— 4	—69	7 47.9	— 6 26 18	—0.6906	.5878	+.0670	+9.5180	.9750
17	B.A.C. 1361	6	+50	— 7	14 20.3	— 0 8 38	+0.2378	.5865	+.0540	+9.5066	.9764
17	ε Tauri	3½	+46	—11	15 51.3	+ 1 18 57	+0.1639	.5861	+.0506	+9.5099	.9760
17	B.A.C. 1468	6	+90	+32	23 13.3	+ 8 24 30	+0.8878	.5839	+.0357	+9.5011	.9770
18	*i* Tauri	5½	+90	+29	1 21.1	+10 27 33	+0.8358	.5832	+.0314	+9.5038	.9767
18	B A C. 1563	6½	+32	—20	7 17.1	— 7 49 32	—0.0634	.5812	+.0193	+9.5260	.9740
18	*m* Tauri	5½	+90	+55	8 5.2	— 7 3 14	+1.1561	.5810	+.0176	+9.5005	.9770
18	*l* Tauri	5½	— 4	—66	8 13.9	— 6 54 51	—0.6923	.5810	+.0174	+9.5389	.9723
18	B.A.C. 1651	6½	+33	—18	13 48.6	— 1 32 23	—0.0408	.5786	+.0059	+9.5271	.9739
18	119 Tauri	5½	+90	+60	18 39.0	+ 3 7 27	+1.1885	.5765	—.0037	+9.5013	.9770
18	120 Tauri	6	+90	+68	19 12.8	+ 3 40 6	+1.2563	.5764	—.0046	+9.5001	.9771
18	B.A.C. 1733	6½	— 9	—70	19 12.8	+ 3 40 7	—0.7729	.5764	—.0046	+9.5418	.9720
19	χ^1 Orionis	4½	— 9	—70	4 10.9	—11 41 5	—0.7656	.5724	—.0220	+9.5392	.9723
19	χ^2 Orionis	6	+24	—30	4 25.7	—11 26 48	—0.2139	.5721	—.0228	+9.5282	.9738
19	χ^3 Orionis	5	+20	—34	8 8.6	— 7 51 52	—0.2783	.5704	—.0295	+9.5275	.9739
19	χ^4 Orionis	5	— 8	—70	8 20.0	— 7 40 50	—0.7596	.5703	—.0297	+9.5369	.9726
19	68 Orionis	6	+ 5	—53	11 54.1	— 4 14 18	—0.5393	.5683	—.0366	+9 5302	.9735
19	71 Orionis	5½	+40	—15	13 10.2	— 3 0 51	+0.0693	.5678	—.0387	+9.5170	.9751
20	26 Geminor.	5½	+90	+36	1 30.4	+ 8 53 44	+0.9754	.5611	—.0608	+9.4846	.9787
20	λ Geminor.	3½	+90	+23	17 55.3	+ 0 45 33	+0.8354	.5522	—.0870	+9.4604	.9811
20	B.A.C. 2432	6½	—54	—72	20 12 7	+ 2 58 27	—1.2569	.5509	—.0903	+9.5021	.9769
21	68 Geminor.	5½	+90	+25	1 13.8	+ 7 49 40	+0.8841	.5484	—.0976	+9.4433	.9826
21	1 Cancri	6	+17	—46	12 25.5	— 5 20 14	—0.3320	.5421	—.1131	+9.4442	.9825
22	27 Cancri	6½	+90	+50	3 5.3	+ 8 52 6	+1.2153	.5348	—.1304	+9.3553	.9885
22	29 Cancri	6	+ 2	—63	3 59.6	+ 9 44 43	—0.6097	.5346	—.1315	+9.4031	.9856
22	B.A.C. 2872	6½	+40	—25	6 34.5	—11 45 11	+0.0751	.5332	—.1343	+9.3750	.9874
22	A^1 Cancri	6	+38	—28	11 20.1	— 7 8 17	+0.0325	.5313	—.1391	+9.3573	.9884
22	A^2 Cancri	6	+60	— 9	13 14.1	— 5 17 44	+0.3819	0.5304	—.1410	+9.3387	9.9894

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Oct. 22	60 Cancri	6	+50	—18	17 47.9	— 0 52 11	+0.2379	0.5286	—.1455	+9.3228	9.9902
22	α Cancri	4	+24	—43	19 6.3	+ 0 23 51	—0.2155	.5281	—.1466	+9.3312	.9898
22	ϰ Cancri	5	+58	—12	23 52.7	+ 5 1 40	+0.3616	.5261	—.1509	+9.2887	.9916
23	B.A.C. 3122	6½	— 9	—78	0 54.3	+ 6 1 27	—0.7890	.5258	—.1518	+9.3218	.9902
23	ω Leonis	6	+62	—10	10 37.6	— 8 32 22	+0.4223	.5224	—.1596	+9.2240	.9938
23	*h* Leonis	6	+ 2	—72	12 26.9	— 6 46 19	—0.6065	.5220	—.1609	+9.2528	.9929
24	π Leonis	5	—52	—82	3 21.7	+ 7 42 37	—1.2900	.5183	—.1703	+9.1793	.9950
24	14 Sextantis	6	+90	+10	6 53.4	+11 8 16	+0.7889	.5179	—.1723	+9.0382	.9974
24	16 Sextantis	6	+32	—38	8 11.4	—11 36 3	—0.0604	.5174	—.1729	+9.0754	.9969
25	34 Sextantis	6	+14	—60	2 5.1	+ 5 47 10	—0.4027	.5155	—.1801	+8.8736	.9988
25	36 Sextantis	6	+73	— 5	3 27.7	+ 7 7 26	+0.5581	.5154	—.1805	+8.7465	.9993
25	p^3 Leonis	6	—23	—88	15 10.5	— 5 29 40	—1.0086	.5155	—.1831	+8 9713	9.9995
25	p^5 Leonis	5	+73	— 5	18 51.0	— 1 55 27	+0.5605	.5156	—.1836	+8.0648	0.0000
26	υ Leonis	4½	—16	—90	7 17.1	+10 9 36	—0.9055	.5166	—.1842	—7.1289	0.0000
27	*f* Virginis	6	—32	—90	14 56.9	— 7 5 16	—1.1087	.5242	—.1774	—8.9478	9.9983
27	χ Virginis	5	+83	+24	16 13.4	— 5 50 57	+1.0264	.5246	—.1769	—9.1011	.9965
27	B.A.C. 4259	6	+83	+26	16 17.5	— 5 46 57	+1.0554	.5246	—.1769	—9.1032	.9965
27	28 Virginis	6	+48	—23	17 37.7	— 4 29 8	+0.2337	.5252	—.1762	—9.0705	.9970
28	B A.C. 4394	5½	+ 5	—70	7 18.1	+ 8 47 1	—0.4772	.5300	—.1690	—9.1573	.9955
31	β^1 Scorpii	2	+71	+28	19 10.8	— 6 2 39	+1.0278	.5677	—.0677	—9.5220	.9745
31	β^2 Scorpii	5½	+71	+27	19 11.0	— 6 2 28	+1.0242	.5677	—.0677	—9.5219	.9745
31	ν^1 Scorpii	7	+51	— 9	22 5.2	— 3 14 14	+0.4798	.5687	—.0626	—9.5147	.9754
31	ν^2 Scorpii	4	+52	— 8	22 5.7	— 3 13 49	+0.4897	.5687	—.0626	—9.5149	.9754
31	B.A.C. 5408	6½	—10	—76	23 17.9	— 2 4 8	—0.5668	.5692	—.0605	—9.4942	.9778
Nov. 1	ψ Ophiuchi	5	+71	+13	3 25.1	+ 1 54 27	+0.8320	.5708	—.0527	—9.5281	.9738
1	χ Ophiuchi	6	—32	—90	4 44.2	+ 3 10 47	—0.9057	.5712	—.0504	—9.4934	.9778
1	B A.C. 5663	6½	+70	+11	16 11.8	— 9 45 59	+0.8024	.5744	—.0292	—9.5380	.9725
1	B.A.C. 5700	6½	+ 9	—45	17 47.7	— 8 13 35	—0.1570	.5749	—.0259	—9.5197	.9748
1	29 Ophiuchi	6	—33	—90	19 53.0	— 6 12 42	—0.8829	.5753	—.0220	—9,5056	.9765
2	B.A.C. 6060	6½	—25	—90	19 3.1	— 7 52 51	—0.7605	.5790	+.0236	—9.5076	.9763
2	B.A.C. 6081	6½	+70	+19	20 43.3	— 6 16 21	+0.9091	.5793	+.0272	—9.5408	.9721
3	16 Sagittarii	6	+70	+51	3 13.9	+ 0 0 5	+1.2257	.5794	+.0397	—9.5428	.9718
3	B.A.C. 6267	6	—55	—90	8 42.4	+ 5 16 37	—1.1820	.5794	+.0508	—9.4872	.9785
3	B.A.C. 6287	6	+11	—46	9 38.4	+ 6 10 32	—0.1639	.5796	+.0526	—9.5084	.9761
3	B.A.C. 6292	6	+23	—38	10 7.4	+ 6 38 31	+0.0502	.5796	+.0533	—9.5124	.9757
3	B.A.C. 6293	6½	—13	—81	10 10.1	+ 6 41 5	—0.6132	.5796	+.0533	—9.4981	.9773
3	B.A.C. 6294	6	— 5	—67	10 10.7	+ 6 41 41	—0.4664	.5796	+.0534	—9.5012	.9770
3	B.A.C. 6299	7	+38	—19	10 15.2	+ 6 45 46	+0.2988	.5796	+.0536	—9.5173	.9751
3	B.A.C. 6301	7	+29	—27	10 36.5	+ 7 6 35	+0.1536	.5796	+.0545	—9.5140	.9755
4	ϱ^1 Sagittarii	4	+72	+ 5	7 35.7	+ 3 19 53	+0.7071	.5781	+.0939	—9.4922	.9780
4	ϱ^2 Sagittarii	5½	+72	+43	7 39.1	+ 3 23 10	+1.1844	.5781	+.0940	—9.5027	.9768
4	υ Sagittarii	4½	—59	—90	7 39.7	+ 3 23 44	—1.2434	.5781	+.0940	—9.4457	.9824
4	e^1 Sagittarii	5½	+25	—37	15 46.7	+11 13 7	—0.0147	.5769	+.1082	—9.4558	.9815
4	e^2 Sagittarii	5	+20	—42	16 33.2	+11 57 56	—0.0979	.5766	+.1096	—9.4516	.9819
4	*g* Sagittarii	5½	+30	—32	23 12.2	— 5 37 31	+0.0597	.5758	+.1204	—9.4362	.9832
5	B.A.C. 6992	6½	+72	+ 2	9 4.1	+ 3 53 6	+0.6679	.5741	+.1359	—9.4188	.9845
5	β Capricor.	3	+73	+ 3	9 10.2	+ 3 58 59	+0.6794	.5741	+.1360	—9.4186	.9845
5	B.A.C. 7221	6½	+51	—17	22 6 4	— 7 32 27	+0.3463	.5719	+.1542	—9.3534	.9886
5	B.A.C. 7242	6	+ 5	—66	23 10.4	— 6 30 46	—0.4681	.5717	+.1556	—9.3207	.9903
6	ν Aquarii	4½	+64	— 7	6 23.2	+ 0 26 44	+0.5182	.5704	+.1647	—9.3148	.9905
6	17 Aquarii	6	+ 2	—73	12 17.0	+ 6 7 57	—0.5484	.5698	+.1711	—9.2350	.9935
6	19 Aquarii	6	+35	—33	13 16.4	+ 7 5 19	+0.0564	.5698	+.1722	—9.2533	.9929
6	ξ Aquarii	4½	—16	—90	18 48.6	—11 34 13	—0.8654	.5690	+.1779	—9.1675	.9952
6	c^1 Capricor.	6	+81	+20	21 59.8	— 8 29 54	+0.9672	.5686	+.1808	—9.2265	.9937
6	c^2 Capricor.	6½	—50	—90	22 33.1	— 7 57 34	—1.2662	0.5685	+.1815	—9.2351	9.9935

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Nov. 7	30 Aquarii	5½	+29	—41	6 5.7	— 0 40 53	—0.0991	0.5679	+.1876	—9.0964	9.9966
7	44 Aquarii	6	+31	—39	12 13.8	+ 5 14 18	—0.0585	.5678	+.1920	—9.0234	.9976
7	51 Aquarii	6	+34	—36	15 20.0	+ 8 14 3	—0.0050	.5678	+.1939	—8.9829	.9980
7	κ Aquarii	5	+74	— 4	21 23.2	— 9 55 28	+0.5786	.5675	+.1973	—8.9335	9.9984
8	B.A.C. 8152	6½	+44	—28	17 38.7	+ 9 37 30	+0.1483	.5683	+.2029	—7.8937	0.0000
8	κ Piscium	4½	+ 7	—69	19 9.0	+11 4 42	—0.5166	.5688	+.2030	+7.9572	.0000
8	9 Piscium	6	+16	—57	19 17.4	+11 12 47	—0.3524	.5689	+.2030	+7.8258	.0000
8	15 Piscium	6½	+47	—25	22 55.4	— 9 16 52	+0.1993	.5696	+.2030	+7.9969	0.0000
8	16 Piscium	6	+ 8	—68	23 19.8	— 8 53 19	—0.5069	.5696	+.2030	+8.3740	9.9999
9	λ Piscium	5	+55	—18	1 49.1	— 6 29 15	+0.3151	.5698	+.2028	+8.2587	.9999
9	19 Piscium	6	—22	—87	3 43.5	— 4 38 54	—1.0035	.5702	+.2026	+8.6796	.9995
9	B.A.C. 8276	6½	+67	— 9	4 47.0	— 3 37 36	+0.4858	.5703	+.2024	+8.4086	.9999
9	22 Piscium	6	+38	—33	6 9.9	— 2 17 40	+0.0495	.5707	+.2022	+8.5808	.9997
9	25 Piscium	6½	+90	+22	6 39.1	— 1 49 32	+0.9692	.5706	+.2020	+8.3698	.9999
9	51 Piscium	6½	+10	—64	23 46.8	— 9 18 15	—0.4721	.5744	+.1957	+9.0344	.9975
10	60 Piscium	6	+90	+23	6 15.5	— 3 3 26	+0.9901	.5760	+.1917	+9.0196	.9976
10	62 Piscium	6	+68	— 7	6 38.2	— 2 41 36	+0.5021	.5761	+.1912	+9.0582	.9972
10	δ Piscium	4½	+50	—21	6 48.3	— 2 31 49	+0.2477	.5761	+.1912	+9.0766	.9969
10	ε Piscium	4	+90	+32	12 56.2	+ 3 22 50	+1.0927	.5777	+.1864	+9.0959	.9966
11	π Piscium	6	+ 2	—71	3 25.8	— 6 39 15	—0.6020	.5818	+.1718	+9.2978	.9913
12	29 Arietis	6½	+39	—26	2 43.4	— 8 13 24	+0.0509	.5878	+.1400	+9.3967	.9861
12	ο Arietis	6½	+61	— 6	7 32.1	— 3 35 27	+0.4026	.5887	+.1321	+9.4056	.9855
12	σ Arietis	6	+90	+31	10 24.1	— 0 49 57	+0.9906	.5891	+.1273	+9.3994	.9859
12	53 Arietis	6	—31	—73	16 54.9	+ 5 26 11	—1.0819	.5898	+.1180	+9.4747	.9798
13	B.A.C. 1096	6½	+38	—22	3 51.3	— 8 2 13	+0.0446	.5910	+.0957	+9.4754	.9797
13	B.A.C. 1240	6½	+74	+ 8	14 46.2	+ 2 27 52	+0.5433	.5910	+.0742	+9.4856	.9787
13	ω^1 Tauri	6	— 4	—68	18 9.9	+ 5 43 51	—0.6880	.5907	+.0675	+9.5181	.9750
14	B.A.C. 1361	6	+50	— 7	0 39.2	+11 58 22	+0.2393	.5903	+.0540	+9.5066	.9764
14	ε Tauri	3½	+46	—11	2 9.3	—10 34 55	+0.1654	.5902	+.0512	+9.5099	.9760
14	B.A.C. 1468	6	+90	+32	9 26.4	— 3 34 13	+0.8863	.5887	+.0357	+9.5011	.9770
14	i Tauri	5½	+90	+29	11 32.6	— 1 32 47	+0.8350	.5883	+.0313	+9.5038	.9767
14	B A C. 1563	6½	+32	—20	17 23.8	+ 4 5 16	—0.0599	.5868	+.0191	+9.5260	.9740
14	m Tauri	5½	+90	+55	18 11.2	+ 4 50 52	+1.1535	.5865	+.0179	+9.5005	.9770
14	l Tauri	5½	— 4	—65	18 19.8	+ 4 59 7	—0.6855	.5865	+.0177	+9.5389	.9723
14	B.A.C. 1651	6½	+34	—18	23 49.3	+10 16 26	—0.0365	.5848	+.0061	+9.5271	.9739
15	119 Tauri	5½	+90	+62	4 34.8	— 9 8 35	+1.2034	.5830	—.0037	+9.5013	.9770
15	120 Tauri	6	+90	+68	5 8.1	— 8 36 32	+1.2537	.5830	—.0045	+9.5001	.9771
15	B.A.C. 1733	6½	— 9	—70	5 8.1	— 8 36 31	—0.7635	.5829	—.0045	+9.5418	.9720
15	χ^1 Orionis	4½	— 8	—70	13 56.5	— 0 7 28	—0.7540	.5792	—.0222	+9.5392	.9723
15	χ^2 Orionis	6	+24	—29	14 11.0	+ 0 6 31	—0.2062	.5792	—.0226	+9.5282	.9738
15	χ^3 Orionis	5	+20	—34	17 49.6	+ 3 37 12	—0.2694	.5773	—.0298	+9.5275	.9739
15	χ^4 Orionis	5	— 8	—70	18 0.8	+ 3 48 1	—0.7471	.5772	—.0301	+9.5369	.9726
15	68 Orionis	6	+ 6	—52	21 30.7	+ 7 10 20	—0.5280	.5754	—.0370	+9.5302	.9735
15	71 Orionis	5½	+40	—15	22 45.3	+ 8 22 17	+0.0765	.5749	—.0393	+9.5170	.9751
16	26 Geminor.	5½	+90	+36	10 50.4	— 3 58 17	+0.9777	.5683	—.0613	+9.4846	.9787
17	λ Geminor.	3½	+90	+24	2 54.9	+11 33 4	+0.8418	.5590	—.0679	+9.4604	.9811
17	68 Geminor.	5½	+90	+26	10 4.5	— 5 31 45	+0.8919	.5548	—.0986	+9.4433	.9826
17	1 Cancri	6	+18	—45	21 3.1	+ 5 5 16	—0.3117	.5485	—.1139	+9.4442	.9825
17	5 Cancri	6	—61	—73	23 10.9	+ 7 8 55	—1.2897	.5470	—.1166	+9.4616	.9810
18	27 Cancri	6½	+90	+51	11 27.4	— 4 58 0	+1.2280	.5398	—.1316	+9.3552	.9835
18	29 Cancri	6	+ 3	—66	12 20.9	— 4 6 14	—0.5838	.5394	—.1323	+9.4030	.9856
18	B.A.C. 2872	6½	+41	—24	14 53.3	— 1 38 37	+0.0966	.5380	—.1352	+9.3749	.9874
18	A^1 Cancri	6	+39	—27	19 34.5	+ 2 53 57	+0.0555	.5353	—.1402	+9.3573	.9884
18	A^2 Cancri	6	+61	— 8	21 26.9	+ 4 42 49	+0.4030	.5344	—.1421	+9.3387	.9894
19	60 Cancri	6	+51	—16	1 57.4	+ 9 5 2	+0.2598	0.5322	—.1463	+9.3228	9.9902

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h m	h m s					
Nov. 19	α Cancri	4	+25	—42	3 14.2	+10 19 30	—0.1893	0.5317	—.1474	+9.3311	9.9898
19	κ Cancri	5	+60	—10	7 57.0	— 9 6 16	+0.3854	.5295	—.1517	+9.2887	.9916
19	B.A.C. 3122	6½	— 7	—78	8 57.8	— 8 7 16	—0.7586	.5291	—.1525	+9.3218	.9902
19	ω Leonis	6	+62	— 8	18 35.0	+ 1 12 42	+0.4483	.5248	—.1602	+9.2240	.9938
19	λ Leonis	6	+ 4	—71	20 23.2	+ 2 57 45	—0.5746	.5240	—.1614	+9.2528	.9929
20	π Leonis	5	—46	—82	11 11.5	— 6 39 55	—1.2540	.5192	—.1704	+9.1792	.9950
20	14 Sextantis	6	+90	+11	14 42.1	— 3 15 23	+0.8175	.5183	—.1723	+9.0381	.9974
20	16 Sextantis	6	+34	—36	15 59.6	— 2 0 3	—0.0284	.5180	—.1729	+9.0753	.9969
21	34 Sextantis	6	+16	—58	9 50.6	— 8 39 37	—0.3682	.5148	—.1798	+8.8736	.9988
21	36 Sextantis	6	+76	— 3	11 12.6	— 7 19 57	+0.5921	.5145	—.1801	+8.7463	.9993
21	p^2 Leonis	6	—20	—88	22 56.3	+ 4 3 50	—0.9770	.5139	—.1826	+8.6717	9.9995
22	p^5 Leonis	5	+76	— 3	2 37.1	+ 7 38 25	+0.5937	.5138	—.1831	+8.0644	0.0000
22	υ Leonis	4½	—13	—90	15 5.2	— 4 14 35	—0.8710	.5145	—.1834	—7.1354	0.0000
23	*f* Virginis	6	—31	—90	22 52.4	+ 1 38 3	—1.0967	.5218	—.1768	—8.9479	9.9983
24	χ Virginis	5	+83	+26	0 9.1	+ 3 52 31	+1.0641	.5223	—.1763	—9.1011	.9965
24	B.A.C. 4259	6	+83	+29	0 13.3	+ 3 56 32	+1.0832	.5223	—.1763	—9.1032	.9965
24	26 Virginis	6	+50	—21	1 33.7	+ 5 14 38	+0.2618	.5228	—.1756	—9.0705	.9970
24	B A.C. 4394	5½	+ 9	—64	15 16.6	— 5 26 47	—0.4522	.5281	—.1687	—9.1573	.9955
24	50 Virginis	6	+81	+17	15 53.1	— 4 51 23	+0.9202	.5284	—.1682	—9.2225	.9939
24	58 Virginis	6	+65	— 8	19 48.4	— 1 3 9	+0.5118	.5301	—.1657	—9.2324	.9936
24	α Virginis	1	+68	— 6	23 42.4	+ 2 43 53	+0.5474	.5320	—.1630	—9.2567	.9927
25	λ Virginis	5	—40	—90	3 37.3	+ 6 31 37	—1.1612	.5340	—.1600	—9.2161	.9940
25	86 Virginis	6	+50	—19	10 3.0	—11 14 32	+0.3094	.5370	—.1548	—9.3088	.9908
26	ι Virginis	4½	—27	—90	2 11.6	+ 4 23 38	—0.9817	.5459	—.1391	—9.3437	.9892
26	5 Libræ	6	+ 9	—57	14 52.2	— 7 20 20	—0.3403	.5531	—.1239	—9.4098	.9852
26	8 Libræ	6	+26	—37	17 4.2	— 5 12 42	—0.0245	.5542	—.1210	—9.4251	.9841
26	α^2 Libræ	2½	+28	—35	17 9.5	— 5 7 36	+0.0130	.5542	—.1209	—9.4262	.9840
27	ν^1 Libræ	5	— 4	—75	0 25.0	+ 1 53 26	—0.5573	.5586	—.1108	—9.4330	.9834
30	16 Sagittarii	6	+70	+43	9 37.3	+ 8 10 57	+1.1768	.5869	+.0399	—9.5428	.9718
30	B.A.C. 6267	6	—62	—90	14 58.9	—10 39 25	—1.2314	.5869	+.0506	—9.4872	.9785
30	B.A.C. 6287	6	+ 8	—49	15 53.7	— 9 46 40	—0.2221	.5868	+.0524	—9.5084	.9761
30	B A.C. 6292	6	+19	—36	16 22.1	— 9 19 19	—0.0099	.5868	+.0536	—9.5125	.9757
30	B.A.C. 6293	6½	—17	—89	16 24.7	— 9 16 47	—0.6679	.5868	+.0537	—9.4982	.9773
30	B.A.C. 6294	6	— 8	—72	16 25.4	— 9 16 11	—0.5223	.5868	+.0537	—9.5012	.9770
30	B.A.C. 6299	7	+34	—22	16 35.6	— 9 6 16	+0.2364	.5868	+.0540	—9.5174	.9751
30	B.A.C. 6301	7	+25	—30	16 40.7	— 9 1 51	+0.0923	.5868	+.0544	—9.5140	.9755
Dec. 1	ρ^1 Sagittarii	4	+65	0	13 25.3	+10 56 53	+0.6283	.5843	+.0944	—9.4922	.9780
1	e^1 Sagittarii	5½	+20	—41	21 28.0	— 5 18 11	—0.0936	.5826	+.1088	—9.4558	.9815
1	e^2 Sagittarii	5	+16	—46	22 13.8	— 4 34 6	—0.1769	.5825	+.1098	—9.4517	.9819
1	B.A.C. 6746	6	—19	—90	22 40.5	— 4 8 20	—0.7998	.5822	+.1108	—9.4345	.9833
2	*q* Sagittarii	5½	+25	—37	4 46.8	+ 1 44 29	—0.0242	.5808	+.1210	—9.4363	.9832
2	B.A.C. 6992	6½	+65	— 4	14 31.3	+11 7 41	+0.5764	.5782	+.1365	—9.4188	.9845
2	β Capricor.	3	+66	— 3	14 37.3	+11 13 29	+0.5878	.5782	+.1366	— 9.4187	.9845
3	B.A.C. 7221	6½	+45	—22	3 26.9	— 0 24 39	+0.2499	.5744	+.1546	—9 3535	.9886
3	B.A.C. 7242	6	0	—74	4 30.5	+ 0 36 39	—0.5638	.5741	+.1560	—9.3297	.9903
3	ν Aquarii	4½	+57	—13	11 41.4	+ 7 32 18	+0.4187	.5720	+.1647	—9.3148	.9905
3	17 Aquarii	6	— 3	—83	17 34.6	—10 47 9	—0.6506	.5703	+.1712	—9.2350	.9935
3	19 Aquarii	6	+30	—38	18 34.0	— 9 49 47	—0.0456	.5702	+.1722	—9.2533	.9929
4	ξ Aquarii	4½	—23	—90	0 6.5	— 4 28 57	—0.9710	.5687	+.1775	—9.1675	.9952
4	c^1 Capricor.	6	+81	+13	3 18.3	— 1 23 58	+0.8650	.5679	+.1803	—9.2266	.9937
4	c^2 Capricor.	6½	+80	+36	3 51.8	— 0 51 36	+1.1647	.5678	+.1809	—9.2351	.9935
4	30 Aquarii	5½	+23	—48	11 26.9	+ 6 27 38	—0.2060	.5660	+.1870	—9.0964	.9966
4	44 Aquarii	6	+25	—45	17 38.1	—11 34 2	—0.1663	.5648	+.1910	—9.0235	.9976
4	51 Aquarii	6	+28	—42	20 46.3	— 8 32 16	—0.1130	.5643	+.1928	—8.9829	.9980
5	κ Aquarii	5	+65	—10	2 54.0	— 2 37 15	+0.4739	0.5633	+.1957	—8.9335	9.9984

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Dec. 5	B.A.C. 8152	6½	+38	−33	23 31.4	− 6 42 20	+0.0439	0.5622	+.2007	−7.8941	0.0000
6	κ Piscium	4½	+ 1	−80	1 3.7	− 5 13 14	−0.6278	.5622	+.2008	+7.9568	.0000
6	9 Piscium	6	+10	−65	1 12.2	− 5 4 58	−0.4617	.5622	+.2008	+7.8253	.0000
6	15 Piscium	6½	+41	−30	4 55.2	− 1 29 38	+0.0965	.5623	+.2007	+7.9966	0.0000
6	16 Piscium	6	+ 1	−80	5 20.2	− 1 5 30	−0.6173	.5623	+.2007	+8.3739	9.9999
6	λ Piscium	5	+48	−24	7 53.1	+ 1 22 10	+0.2145	.5623	+.2004	+8.2585	.9999
6	19 Piscium	6	−31	−87	9 50.3	+ 3 15 24	−1.1179	.5625	+.2002	+8.6795	.9995
6	B.A.C. 8276	6½	+59	−14	10 55.4	+ 4 18 15	+0.3884	.5626	+.2000	+8.4085	.9999
6	22 Piscium	6	+33	−39	12 20.4	+ 5 40 19	−0.0524	.5626	+.1998	+8.5808	.9997
6	25 Piscium	6½	+90	+15	12 50.3	+ 6 9 12	+0.8985	.5626	+.1996	+8.3697	.9999
7	51 Piscium	6½	+ 4	−72	6 26.8	− 0 50 45	−0.5716	.5651	+.1929	+9.0343	.9975
7	60 Piscium	6	+90	+18	13 7.2	+ 5 35 47	+0.9137	.5662	+.1891	+9.0196	.9976
7	62 Piscium	6	+62	−11	13 30.5	+ 5 58 18	+0.4197	.5665	+.1887	+9.0581	.9972
7	δ Piscium	4½	+45	−25	13 41.0	+ 6 8 23	+0.1618	.5665	+.1886	+9.0766	.9969
7	ε Piscium	4	+90	+26	20 0.3	−11 45 31	+1.0231	.5675	+.1848	+9.0959	.9966
8	π Piscium	6	− 2	−78	10 57.0	+ 2 39 41	−0.6826	.5720	+.1699	+9.2978	.9913
9	29 Arietis	6½	+36	−28	10 56.6	+ 1 47 39	+0.0025	.5789	+.1391	+9.3967	.9861
9	ο Arietis	6½	+58	− 8	15 53.4	+ 6 33 39	+0.3637	.5800	+.1315	+9.4056	.9855
9	σ Arietis	6	+90	+28	18 50.1	+ 9 23 51	+0.9621	.5809	+.1267	+9.3994	.9859
10	53 Arietis	6	−36	−73	1 30.9	− 8 10 1	−1.1275	.5825	+.1156	+9.4747	.9798
10	B.A.C. 1096	6½	+37	−23	12 42.4	+ 2 36 45	+0.0252	.5847	+.0958	+9.4754	.9797
10	B.A.C. 1240	6½	+74	+ 7	23 50.1	−10 40 21	+0.5417	.5860	+.0748	+9.4856	.9787
11	ω^1 Tauri	6	− 4	−69	3 17.2	− 7 20 55	−0.6955	.5861	+.0683	+9.5181	.9750
11	B.A.C. 1361	6	+51	− 7	9 52.4	− 1 0 28	+0.2472	.5864	+.0550	+9.5066	.9764
11	ε Tauri	3½	+46	−10	11 23.7	+ 0 27 28	+0.1746	.5864	+.0517	+9.5099	.9760
11	B.A.C. 1468	6	+90	+33	18 46.1	+ 7 33 21	+0.9091	.5860	+.0369	+9.5011	.9770
11	*i* Tauri	5½	+90	+31	20 53.6	+ 9 36 8	+0.8600	.5857	+.0327	+9.5038	.9767
12	B.A.C. 1563	6½	+34	−19	2 47.8	− 8 42 46	−0.0323	.5851	+.0206	+9.5260	.9740
12	*m* Tauri	5½	+90	+59	3 35.5	− 7 56 49	+1.1877	.5851	+.0188	+9.5005	.9770
12	*l* Tauri	5½	− 2	−62	3 44.1	− 7 48 30	−0.6596	.5851	+.0186	+9.5389	.9723
12	B.A.C. 1651	6½	+36	−16	9 15.7	− 2 29 10	−0.0006	.5840	+.0076	+9.5271	.9739
12	119 Tauri	5½	+90	+68	14 2.4	+ 2 7 0	+1.2497	.5829	−.0022	+9.5013	.9770
12	B.A.C. 1733	6½	− 6	−69	14 35.9	+ 2 39 14	−0.7226	.5826	−.0035	+9.5418	.9720
12	B.A.C. 1835	6½	−57	−69	20 49.8	+ 8 39 30	−1.2523	.5809	−.0159	+9.5507	.9707
12	χ^1 Orionis	4½	− 5	−67	23 25.1	+11 9 6	−0.7011	.5800	−.0212	+9.5392	.9723
12	χ^2 Orionis	6	+27	−26	23 39.6	+11 23 5	−0.1518	.5800	−.0216	+9.5282	.9738
13	χ^3 Orionis	5	+24	−30	3 18.0	− 9 6 23	−0.2103	.5788	−.0284	+9.5275	.9739
13	χ^4 Orionis	5	− 4	−66	3 29.2	− 8 55 35	−0.6887	.5786	−.0291	+9.5369	.9726
13	68 Orionis	6	+ 9	−47	6 58.7	− 5 33 42	−0.4640	.5773	−.0357	+9.5302	.9735
13	71 Orionis	5½	+44	−11	8 13.1	− 4 21 55	+0.1425	.5769	−.0379	+9.5170	.9751
13	26 Geminor.	5½	+90	+42	20 14.8	+ 7 14 7	+1.0590	.5716	−.0602	+9.4846	.9787
14	λ Geminor.	3½	+90	+31	12 11.2	− 1 22 39	+0.9421	.5633	−.0873	+9.4604	.9811
14	B.A.C. 2432	6½	−36	−72	14 24.4	+ 0 45 59	−1.1249	.5620	−.0911	+9.5021	.9769
14	68 Geminor.	5½	+90	+34	19 16.2	+ 1 27 55	+1.0002	.5590	−.0983	+9.4433	.9826
14	*f* Geminor.	6	−56	−72	21 55.4	+ 8 1 44	−1.2656	.5577	−.1023	+9.4894	.9782
15	1 Cancri	6	+25	−37	6 6.9	− 8 3 4	−0.1872	.5531	−.1138	+9.4442	.9825
15	5 Cancri	6	−39	−73	8 13.0	− 6 1 3	−1.1588	.5520	−.1166	+9.4616	.9810
15	29 Cancri	6	+11	−55	21 12.4	+ 6 33 11	−0.4404	.5444	−.1326	+9.4030	.9856
15	B.A.C. 2872	6½	+50	−16	23 42.7	+ 8 58 42	+0.2401	.5429	−.1356	+9.3749	.9874
16	A^1 Cancri	6	+48	−19	4 20.1	−10 32 36	+0.2039	.5405	−.1404	+9.3573	.9884
16	A^2 Cancri	6	+73	0	6 10.9	− 8 45 15	+0.5519	.5395	−.1423	+9.3387	.9894
16	60 Cancri	6	+62	− 8	10 37.8	− 4 26 43	+0.4138	.5370	−.1469	+9.3228	.9902
16	α Cancri	4	+34	−32	11 53.6	− 3 13 16	−0.0322	.5364	−.1480	+9.3311	.9898
16	κ Cancri	5	+72	− 2	16 32.6	+ 1 17 15	+0.5447	.5340	−.1523	+9.2887	.9916
16	B.A.C. 3122	6½	+ 2	−70	17 32.6	+ 2 15 26	−0.5939	0.5335	−.1531	+9.3218	9.9902

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1864.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h m	h m s					
Dec. 17	ω Leonis	6	+79	+ 1	3 2.7	+11 28 15	+0.6167	0.5291	−.1606	+9.2239	9.9938
17	h Leonis	6	+14	−57	4 49.6	−10 47 59	−0.4012	.5282	−.1620	+9.2527	.9929
17	B.A.C. 3407	6	−37	−81	18 22.7	+ 2 21 4	−1.1733	.5228	−.1705	+9.1921	.9947
17	π Leonis	5	−28	−82	19 28.6	+ 3 25 1	−1.0683	.5223	−.1710	+9.1792	.9950
17	14 Sextantis	6	+90	+24	22 57.4	+ 6 47 41	+0.9998	.5211	−.1727	+9.0380	.9974
18	16 Sextantis	6	+45	−26	0 14.3	+ 8 2 24	+0.1569	.5207	−.1733	+9.0752	.9969
18	B.A.C. 3529	6	−38	−83	6 11.4	−10 10 50	−1.1888	.5190	−.1760	+9.0924	.9966
18	34 Sextantis	6	+26	−45	17 58.5	+ 1 16 0	−0.1739	.5162	−.1799	+8.8734	.9988
18	36 Sextantis	6	+90	+ 8	19 20.1	+ 2 35 22	+0.7858	.5159	−.1803	+8.7461	.9993
19	p^3 Leonis	6	− 7	−88	6 2.1	−11 2 46	−0.7748	.5143	−.1824	+8.6708	9.9995
19	p^5 Leonis	5	+90	+ 8	10 42.8	− 6 28 8	+0.7914	.5138	−.1829	+8.0634	0.0000
19	υ Leonis	4½	− 1	−85	23 12.0	+ 5 39 57	−0.6734	.5136	−.1831	−7.1441	0.0000
21	B.A.C. 4225	6½	−53	−90	4 28.1	+10 6 11	−1.2930	.5176	−.1771	−8.8757	9.9988
21	f Virginis	6	−17	−90	7 11.3	−11 15 17	−0.9118	.5178	−.1762	−8.9480	.9983
21	χ Virginis	5	+83	+45	8 28.9	− 9 59 58	+1.2442	.5189	−.1756	−9.1012	.9965
21	B.A.C. 4259	6	+83	+49	8 33.0	− 9 55 55	+1.2732	.5189	−.1755	−9.1033	.9965
21	28 Virginis	6	+63	−11	9 54.3	− 8 37 2	+0.4488	.5190	−.1749	−9.0706	.9970
21	B.A.C. 4394	5½	+18	−52	23 45.8	+ 4 50 18	−0.2767	.5240	−.1679	−9.1574	.9955
22	50 Virginis	6	+81	+30	0 22.8	+ 5 26 8	+1.0990	.5241	−.1676	−9.2225	.9939
22	58 Virginis	6	+79	+ 2	4 20.7	+ 9 17 4	+0.6863	.5258	−.1652	−9.2325	.9936
22	α Virginis	1	+80	+ 4	8 17.5	−10 53 10	+0.7185	.5275	−.1625	−9.2588	.9927
22	h Virginis	5	+26	−90	12 15.2	− 7 2 38	−0.9986	.5292	−.1596	−9.2161	.9940
22	86 Virginis	6	+61	−10	18 45.5	− 0 44 11	+0.4690	.5325	−.1544	−9.3089	.9908
23	λ Virginis	4½	−18	−90	11 5.1	− 8 54 55	−0.8439	.5415	−.1390	−9.3437	.9892
23	5 Libræ	6	+16	−49	23 53.4	+ 3 28 49	−0.2182	.5494	−.1243	−9.4098	.9852
24	8 Libræ	6	+33	−30	2 6.5	+ 5 37 34	+0.0953	.5504	−.1215	−9.4251	.9841
24	α^2 Libræ	2½	+35	−28	2 11.8	+ 5 42 41	+0.1327	.5505	−.1214	−9.4263	.9840
24	ν^1 Libræ	5	+ 2	−65	9 31.1	−11 12 30	−0.4494	.5554	−.1115	−9.4331	.9834
24	ν^2 Libræ	6½	+15	−49	9 36.3	−11 7 36	−0.2143	.5553	−.1114	−9.4393	.9830
24	28 Libræ	6	+73	+19	16 1.3	− 4 55 23	+0.9217	.5594	−.1024	−9.4820	.9790
24	ζ^1 Libræ	4	−29	−90	19 23.4	− 1 40 10	−0.9305	.5616	−.0971	−9.4467	.9823
24	ζ^2 Libræ	7	+13	−48	19 58.8	− 1 5 59	−0.2112	.5618	−.0964	−9.4651	.9807
24	B.A.C. 5099	7	+ 1	−64	20 15.2	− 0 50 5	−0.4326	.5618	−.0961	−9.4605	.9811
24	ζ^3 Libræ	6	−46	−90	20 29.0	− 0 36 49	−1.1408	.5622	−.0954	−9.4440	.9826
24	ζ^4 Libræ	6	−32	−90	21 29.6	+ 0 21 44	−0.9723	.5629	−.0939	−9.4505	.9820
25	β^1 Scorpii	2	+71	+31	11 50.8	− 9 46 59	+1.0668	.5713	−.0703	−9.5220	.9745
25	β^2 Scorpii	5½	+71	+31	11 51.0	− 9 46 47	+1.0637	.5713	−.0703	−9.5219	.9745
25	ν^1 Scorpii	7	+54	− 6	14 42.4	− 7 1 27	+0.5176	.5731	−.0651	−9.5147	.9754
25	ν^2 Scorpii	4	+54	− 6	14 43.9	− 7 0 2	+0.5273	.5731	−.0651	−9.5149	.9754
25	B.A.C. 5408	6½	− 7	−72	15 53.8	− 5 52 36	−0.5213	.5737	−.0631	−9.4942	.9778
25	ψ Ophiuchi	5	+71	+15	19 56.4	− 1 58 39	+0.8525	.5758	−.0558	−9.5281	.9738
25	χ Ophiuchi	6	−29	−90	21 13.9	− 0 43 47	−0.8688	.5768	−.0535	−9.4934	.9778
26	B A.C. 5663	6½	+70	+11	8 25.4	+10 3 10	+0.7916	.5824	−.0317	−9.5380	.9725
29	B.A.C. 6992	6½	+55	−11	21 49.1	− 3 46 51	+0.4401	.5879	+.1370	−9 4188	.9845
29	β Capricor.	3	+56	−11	21 55.0	− 3 41 13	+0.4511	.5879	+.1371	−9.4187	.9845
30	B.A.C. 7221	6½	+35	−30	10 21.6	+ 8 17 40	+0.0964	.5841	+.1554	−9.3535	.9886
30	B.A.C. 7242	6	− 9	−90	11 23.3	+ 9 17 2	−0.7089	.5835	+.1571	−9.3208	.9903
30	8 Aquarii	6	+77	+47	14 14.7	−11 57 52	+1.2445	.5830	+.1606	−9.3705	.9877
30	ν Aquarii	4½	+46	−22	18 21.6	− 8 0 3	+0.2503	5817	+.1657	−9.3148	.9905
31	17 Aquarii	6	−14	−90	0 4.6	− 2 29 37	−0.8151	.5804	+.1713	−9.2350	.9935
31	19 Aquarii	6	+20	−49	1 2.3	− 1 33 56	−0.2186	.5794	+.1735	−9.2533	.9929
31	ξ Aquarii	4½	−37	−90	6 25.7	+ 3 37 40	−1.1405	.5774	+.1791	−9.1675	.9952
31	c^1 Capricor.	6	+78	+ 1	9 32.3	+ 6 37 33	+0.6697	.5765	+.1820	−9.2266	.9937
31	c^2 Capricor.	6½	+80	+20	10 4.8	+ 7 8 55	+0.9654	.5765	+.1823	−9.2351	.9935
31	30 Aquarii	5½	+12	−60	17 28.2	− 9 43 34	−0.3996	.5740	+.1885	−9.0965	.9966
31	44 Aquarii	6	+14	−58	23 30.6	− 3 54 2	−0.3676	0.5723	+.1931	−9.0235	9.9976

NOTE. — B. A. C., British Association Catalogue.

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1864.

Date.		Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
				Washington.		Angle from		Washington		Angle from		
				Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
				h m	h m	°	°	h m	h m	°	°	h m
Jan.	2	B.A.C. 4531	6	9 11	14 22	263	218	10 17	15 28	45	6	1 6
	20	χ^4 Orionis	5	3 0	7 2	205	152	3 34	7 36	157	107	0 34
	22	1 Cancri	6	11 31	15 23	319	12	12 29	16 22	358	52	0 59
	23	29 Cancri	6	0 54	4 44	265	218	1 49	5 39	67	26	0 55
	23	A^1 Cancri	6	10 34	14 22	247	287	11 53	15 41	61	111	1 19
	23	A^2 Cancri	6	13 18	17 6	219	272	14 14	18 2	96	148	0 56
	30	B.A.C. 4679	6½	8 23	11 44	271	220	9 20	12 40	44	357	0 57
Feb.	9	9 Piscium	6	4 8	6 51	329	18	4 55	7 38	76	127	0 47
	13	53 Arietis	6	3 24	5 51	314	326	4 41	7 8	76	117	1 17
	14	ω^1 Tauri	6	8 14	10 36	220	276	8 58	11 20	139	195	0 44
	15	l Tauri	5½	10 50	13 8	269	323	11 47	14 5	79	129	0 57
	16	χ^1 Orionis	4½	7 37	9 51	259	305	8 59	11 14	80	135	1 23
	16	χ^2 Orionis	5	12 44	14 58	222	272	13 25	15 39	119	165	0 41
	19	B.A.C. 2872	6½	14 23	16 25	294	346	15 4	17 6	28	78	0 41
	21	14 Sextantis	6	15 16	17 10	266	318	16 13	18 7	49	100	0 57
	22	36 Sextantis	6	10 19	12 9	300	295	11 0	12 51	356	4	0 41
	22	B.A.C. 3726	6	16 24	18 14	158	208	Star 0′.0	south of	☾'s	limb.	
	25	q Virginis	6	14 9	15 47	325	342	14 24	16 2	344	4	0 15
	27	28 Libræ	6	16 1	17 31	300	318	17 1	18 31	32	61	1 0
Mar.	14	B.A.C. 1733	6½	6 45	7 13	310	348	7 45	8 13	38	88	1 0
	18	60 Cancri	6	8 48	9 0	239	239	10 18	10 30	67	100	1 30
	26	B.A.C. 5109	6½	18 7	17 47	235	268	19 13	18 53	113	155	1 6
	28	ξ Ophiuchi	5	14 28	14 0	339	312	14 50	14 22	11	349	0 23
	28	B.A.C. 5866	6	16 56	16 28	258	254	18 20	17 51	104	118	1 24
	29	15 Sagittarii †	5	12 43	12 12	237	187	13 40	13 8	117	72	0 57
	29	16 Sagittarii †	6	12 51	12 20	319	269	13 30	12 58	36	349	0 38
	30	d Sagittarii	5	15 5	14 29	185	141	Star 1′.3	south of	☾'s	limb.	
	30	ρ^2 Sagittarii	5½	17 7	16 31	332	305	17 57	17 20	49	31	0 50
April	10	B.A.C. 1651 ‡	6½	12 15	10 57	253	302	13 5	11 47	96	139	0 50
	11	71 Orionis ‡	5½	12 35	11 13	255	306	13 28	12 6	85	132	0 53
	17	p^2 Leonis	6	15 27	13 41	221	270	16 26	14 40	92	143	0 59
	20	i Virginis	5	17 18	15 20	163	207	Star 0′.5	south of	☾'s	limb.	
	23	ω^1 Scorpii	4½	15 58	13 48	226	225	17 8	14 57	117	131	1 10
	24	B.A.C. 5758	6	17 12	15 58	190	193	17 28	15 14	168	175	0 16
May	1	λ Piscium †	5	17 24	14 41	270	219	18 16	15 34	132	81	0 52
	12	κ Cancri	5	10 38	7 14	301	335	11 22	7 58	5	47	0 44
	17	g Virginis	6	17 57	14 13	319	8	18 24	14 39	9	59	0 26
	20	41 Libræ	6	13 7	9 11	343	313	Star 1′.6	north of	☾'s	limb.	
	20	κ Libræ	5	14 33	10 37	283	267	15 49	11 53	50	51	1 15
	28	B.A.C. 8152 †	6½	17 2	12 33	354	303	17 25	12 57	46	355	0 24
June	8	A^2 Cancri	6	13 27	8 17	304	357	14 3	8 53	14	66	0 36
	14	B.A.C. 4531	6	18 9	12 34	165	189	Star 0′.3	south of	☾'s	limb.	
	18	ξ Ophiuchi	5	19 24	13 33	313	340	20 22	14 31	58	94	0 58
	18	B.A.C. 5866	6	21 28	15 46	188	233	Star 0′.9	south of	☾'s	limb.	
	19	15 Sagittarii	5	15 6	9 12	259	224	16 19	10 25	102	79	1 13
	19	16 Sagittarii	6	15 44	9 50	1	331	Star 0′.7	north of	☾'s	limb.	
	19	21 Sagittarii	5	20 59	15 4	229	261	21 39	15 44	157	195	0 40
	20	d Sagittarii	5	16 11	10 12	190	155	16 15	10 17	183	149	0 4
	20	ρ^2 Sagittarii	5½	18 17	12 17	324	311	19 18	13 18	63	63	1 1
July	12	B.A.C. 4679	6½	18 20	10 55	213	259	19 7	11 42	123	172	0 48
	13	B.A.C. 4896	6	15 59	8 30	163	180	Star 0′.2	south of	☾'s	limb.	
	14	λ Libræ	5	19 35	12 2	211	252	20 12	12 38	145	191	0 37
	22	B.A.C. 8276	6½	20 15	12 10	321	276	21 18	13 13	92	55	1 2

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1864.

Date.		Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
				Washington.		Angle from		Washington		Angle from		
				Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
				h m	h m	°	°	h m	h m	°	°	h m
July	23	62 Piscium	6	22 53	14 44	244	211	23 38	15 28	173	152	0 45
	23	δ Piscium	4½	23 8	14 59	295	265	0 26	16 17	122	117	1 18
	25	29 Arietis	6½	20 44	12 27	325	272	21 31	13 14	74	21	0 47
	26	B.A.C. 1096	6½	23 48	15 27	263	209	0 55	16 34	133	84	1 7
	27	B.A.C. 1361	6	22 7	13 42	233	181	22 44	14 19	151	98	0 38
	27	ε Tauri	3½	23 57	15 32	216	161	0 24	15 59	170	115	0 27
	28	B.A.C. 1651	6½	22 57	14 28	281	229	23 56	15 26	94	40	0 59
	29	71 Orionis	5½	23 26	14 53	252	202	0 19	15 46	113	60	0 54
Aug.	12	ξ Ophiuchi	5	18 5	8 38	256	268	19 23	9 56	110	137	1 18
	13	21 Sagittarii	5	21 6	11 35	193	226	Star 1′.0	south of	☾'s	limb.	
	14	ρ^2 Sagittarii	5½	18 7	8 32	303	288	19 22	9 47	82	84	1 15
	17	κ Aquarii	5	3 16	17 28	275	324	4 9	18 21	130	181	0 53
	24	B.A.C. 1563	6½	23 53	13 37	341	286	0 23	14 8	38	343	0 31
	25	χ^2 Orionis	5	2 22	16 2	3	308	Star 2′.6	north of	☾'s	limb.	
	28	B.A.C. 2872	6½	1 49	15 17	270	220	2 48	16 16	72	19	0 59
Sept.	7	β^1 Scorpii	2	19 38	8 29	260	301	20 46	9 37	98	146	1 8
	7	β^2 Scorpii	5½	19 38	8 29	261	302	20 47	9 37	97	145	1 8
	9	B.A.C. 6081	6½	20 50	9 32	289	324	21 59	10 41	92	136	1 9
	15	25 Piscium	6½	21 39	9 58	254	221	22 32	10 51	162	140	0 53
	16	60 Piscium	6	19 51	8 6	262	211	20 43	8 58	145	96	0 52
	16	62 Piscium	6	21 5	9 19	24	337	Star 0′.0	north of	☾'s	limb.	
	25	κ Cancri	5	3 19	14 57	232	180	4 18	15 56	102	49	1 0
Oct.	11	κ Aquarii ‡	5	4 4	14 40	301	352	4 56	15 32	100	151	0 52
	12	15 Piscium ‡	6½	4 53	15 24	329	19	5 49	15 21	82	133	0 57
	17	B.A.C. 1361	6	3 27	13 39	302	276	4 45	14 57	76	91	1 18
	17	ε Tauri	3½	6 7	16 18	342	25	6 46	16 57	41	91	0 39
	22	A^2 Cancri †	6	1 26	11 19	272	224	2 22	12 14	68	17	0 55
	22	60 Cancri	6	6 37	16 28	278	237	7 55	17 47	40	18	1 19
	25	p^5 Leonis	5	7 41	17 21	217	172	8 51	18 31	91	56	1 10
	27	28 Virginis *	6	6 5	15 37	275	223	6 58	16 30	44	353	0 53
Nov.	4	ρ^1 Sagittarii	4	23 18	8 20	256	300	0 11	9 13	137	186	0 53
	5	B.A.C. 6992 ‡	6½	0 58	9 56	244	292	1 39	10 37	155	205	0 41
	5	β Capricor. ‡	3	1 7	10 4	239	287	1 43	10 41	160	210	0 37
	6	ν Aquarii	4½	21 28	6 22	339	346	22 26	7 20	71	91	0 57
	9	25 Piscium	6½	20 25	5 7	256	289	21 18	6 1	157	199	0 53
	10	60 Piscium	6	19 51	4 29	258	207	20 41	5 20	149	100	0 50
	10	62 Piscium	6	20 57	5 35	9	321	21 13	5 52	39	352	0 16
	12	o Arietis	6½	21 56	6 27	19	325	Star 1′.2	north of	☾'s	limb.	
	13	B.A.C. 1240	6½	4 43	13 9	282	227	5 51	14 16	108	56	1 8
	14	B.A.C. 1468	6	23 42	8 4	191	136	Star 2′.7	south of	☾'s	limb.	
	18	B.A.C. 2872	6½	5 43	13 48	214	267	6 25	14 31	15	334	0 42
Dec.	6	λ Piscium	5	1 36	8 31	353	25	2 18	9 14	61	101	0 42
	6	B.A.C. 8276 ‡	6½	4 54	11 49	281	331	5 50	12 45	118	169	0 56
	11	B.A.C. 1361	6	2 15	8 51	312	266	3 24	10 0	71	45	1 9
	11	ε Tauri	3½	4 31	11 6	311	316	5 40	12 15	44	99	1 9
	16	60 Cancri	6	2 25	8 41	255	204	3 25	9 41	83	31	1 0
	16	κ Cancri	5	10 18	16 33	254	283	11 40	17 54	55	100	1 21
	22	86 Virginis	6	11 43	17 34	291	265	12 41	18 32	16	2	0 59

* Whole occultation below the horizon of Washington.
† Immersion below the horizon of Washington.
‡ Emersion below the horizon of Washington.

The *Angles of Position*, for the points of contact, are for *direct vision*, and are reckoned from the Moon's *North Point* and from its *Vertex* towards the West. For *inverted image*, add 180° to the angles given.

WASHINGTON MEAN TIME.

JANUARY.

				d	h	m	s					d	h	m	s
I.	Occult.	Reapp.		1	1	38		II.	Shadow	Egress		8	22	42	
II.	Shadow	Ingress	W.	1	17	44		I.	Shadow	Egress		8	23	51	
II.	Transit	Ingress		1	19	38		II.	Transit	Egress		9	0	43	
I.	Shadow	Ingress		1	19	45		I.	Transit	Egress		9	0	54	
II.	Shadow	Egress		1	20	6		I.	Eclipse	Disapp.		9	18	53	25.1
I.	Transit	Ingress		1	20	43		I.	Occult.	Reapp.		9	22	7	
I.	Shadow	Egress		1	21	57		III.	Shadow	Ingress		10	13	3	
II.	Transit	Egress		1	21	59		II.	Eclipse	Disapp.		10	15	7	3.2
I.	Transit	Egress		1	22	55		III.	Shadow	Egress		10	15	12	
I.	Eclipse	Disapp.	W.	2	16	59	49.3	I.	Shadow	Ingress	W.	10	16	8	
I.	Occult.	Reapp.		2	20	8		I.	Transit	Ingress	W.	10	17	11	
III.	Shadow	Ingress		3	9	5		III.	Transit	Ingress	W.	10	17	20	
III.	Shadow	Egress		3	11	15		I.	Shadow	Egress	W.	10	18	20	
II.	Eclipse	Disapp.		3	12	34	2.8	I.	Transit	Egress		10	19	23	
III.	Transit	Ingress		3	13	3		III.	Transit	Egress		10	19	24	
I.	Shadow	Ingress		3	14	14		II.	Occult.	Reapp.		10	19	30	
III.	Transit	Egress		3	15	10		I.	Eclipse	Disapp.		11	13	21	46.6
I.	Transit	Ingress		3	15	13		I.	Occult.	Reapp.	W.	11	16	37	
I.	Shadow	Egress	W.	3	16	26		II.	Shadow	Ingress		12	9	38	
II.	Occult.	Reapp.	W.	3	16	48		I.	Shadow	Ingress		12	10	36	
I.	Transit	Egress	W.	3	17	25		I.	Transit	Ingress		12	11	40	
I.	Eclipse	Disapp.		4	11	28	11.3	II.	Transit	Ingress		12	11	45	
I.	Occult.	Reapp.		4	14	37		II.	Shadow	Egress		12	12	0	
II.	Shadow	Ingress		5	7	2		I.	Shadow	Egress		12	12	48	
I.	Shadow	Ingress		5	8	42		I.	Transit	Egress		12	13	52	
II.	Transit	Ingress		5	9	0		II.	Transit	Egress		12	14	5	
II.	Shadow	Egress		5	9	24		I.	Eclipse	Disapp.		13	7	50	13.1
I.	Transit	Ingress		5	9	43		I.	Occult.	Reapp.		13	11	6	
I.	Shadow	Egress		5	10	54		III.	Eclipse	Disapp.		14	3	14	10.3
II.	Transit	Egress		5	11	20		II.	Eclipse	Disapp.		14	4	23	32.7
I.	Transit	Egress		5	11	55		I.	Shadow	Ingress		14	5	4	
I.	Eclipse	Disapp.		6	5	56	38.5	III.	Eclipse	Reapp.		14	5	8	27.1
I.	Occult.	Reapp.		6	9	7		I.	Transit	Ingress		14	6	9	
III.	Eclipse	Disapp.		6	23	16	45.2	I.	Shadow	Egress		14	7	16	
III.	Eclipse	Reapp.		7	1	11	19.4	III.	Occult.	Disapp.		14	7	33	
II.	Eclipse	Disapp.		7	1	50	34.7	I.	Transit	Egress		14	8	21	
I.	Shadow	Ingress		7	3	11		II.	Occult.	Reapp.		14	8	51	
III.	Occult.	Disapp.		7	3	17		III.	Occult.	Reapp.		14	9	36	
I.	Transit	Ingress		7	4	13		I.	Eclipse	Disapp.		15	2	18	31.9
I.	Shadow	Egress		7	5	23		I.	Occult.	Reapp.		15	5	35	
III.	Occult.	Reapp.		7	5	23		II.	Shadow	Ingress		15	22	56	
II.	Occult.	Reapp.		7	6	9		I.	Shadow	Ingress		15	23	32	
I.	Transit	Egress		7	6	25		I.	Transit	Ingress		16	0	38	
I.	Eclipse	Disapp.		8	0	24	57.9	II.	Transit	Ingress		16	1	7	
I.	Occult.	Reapp.		8	3	37		II.	Shadow	Egress		16	1	18	
II.	Shadow	Ingress		8	20	20		I.	Shadow	Egress		16	1	44	
I.	Shadow	Ingress		8	21	39		I.	Transit	Egress		16	2	50	
II.	Transit	Ingress		8	22	23		II.	Transit	Egress		16	3	27	
I.	Transit	Ingress		8	22	40		I.	Eclipse	Disapp.		16	20	46	58.6

WASHINGTON MEAN TIME.

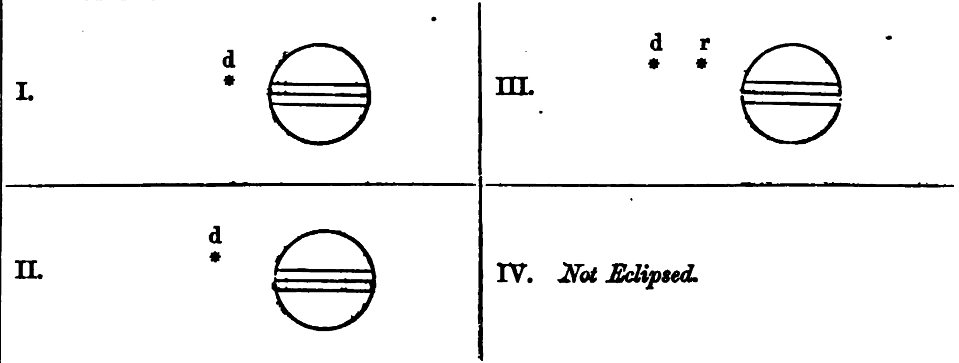
JANUARY.

				d	h	m	s
I.	Occult.	Reapp.		17	0	4	
III.	Shadow	Ingress	W.	17	17	1	
II.	Eclipse	Disapp.	W.	17	17	40	0.0
I.	Shadow	Ingress	W.	17	18	0	
I.	Transit	Ingress		17	19	7	
III.	Shadow	Egress		17	19	10	
I.	Shadow	Egress		17	20	12	
I.	Transit	Egress		17	21	19	
III.	Transit	Ingress		17	21	35	
II.	Occult.	Reapp.		17	22	10	
III.	Transit	Egress		17	23	37	
I.	Eclipse	Disapp.		18	15	15	19.4
I.	Occult.	Reapp.		18	18	33	
II.	Shadow	Ingress		19	12	14	
I.	Shadow	Ingress		19	12	28	
I.	Transit	Ingress		19	13	36	
II.	Transit	Ingress		19	14	29	
II.	Shadow	Egress		19	14	36	
I.	Shadow	Egress		19	14	40	
I.	Transit	Egress	W.	19	15	47	
II.	Transit	Egress	W.	19	16	48	
I.	Eclipse	Disapp.		20	9	43	45.7
I.	Occult.	Reapp.		20	13	2	
I.	Shadow	Ingress		21	6	56	
II.	Eclipse	Disapp.		21	6	56	26.5
III.	Eclipse	Disapp.		21	7	11	30.7
I.	Transit	Ingress		21	8	5	
III.	Eclipse	Reapp.		21	9	5	32.7
I.	Shadow	Egress		21	9	9	
I.	Transit	Egress		21	10	16	
II.	Occult.	Reapp.		21	11	29	
III.	Occult.	Disapp.		21	11	46	
III.	Occult.	Reapp.		21	13	47	
I.	Eclipse	Disapp.		22	4	12	4.1
I.	Occult.	Reapp.		22	7	31	
I.	Shadow	Ingress		23	1	25	
II.	Shadow	Ingress		23	1	32	
I.	Transit	Ingress		23	2	34	
I.	Shadow	Egress		23	3	37	
II.	Transit	Ingress		23	3	50	
II.	Shadow	Egress		23	3	54	
I.	Transit	Egress		23	4	45	
II.	Transit	Egress		23	6	9	
I.	Eclipse	Disapp.		23	22	40	29.9
I.	Occult.	Reapp.		24	2	0	
I.	Shadow	Ingress		24	19	53	
II.	Eclipse	Disapp.		24	20	12	52.5
III.	Shadow	Ingress		24	20	59	
I.	Transit	Ingress		24	21	3	
I.	Shadow	Egress		24	22	5	
II.	Eclipse	Reapp.		24	22	27	49.5
II.	Occult.	Disapp.		24	22	29	
III.	Shadow	Egress		24	23	8	
I.	Transit	Egress		24	23	14	
II.	Occult.	Reapp.		25	0	48	
III.	Transit	Ingress		25	1	46	
III.	Transit	Egress		25	3	46	
I.	Eclipse	Disapp.	W.	25	17	8	50.0
I.	Occult.	Reapp.		25	20	29	
I.	Shadow	Ingress		26	14	21	
II.	Shadow	Ingress	W.	26	14	50	
I.	Transit	Ingress	W.	26	15	32	
I.	Shadow	Egress	W.	26	16	33	
II.	Transit	Ingress	W.	26	17	11	
II.	Shadow	Egress	W.	26	17	12	
I.	Transit	Egress	W.	26	17	43	
II.	Transit	Egress		26	19	30	
I.	Eclipse	Disapp.		27	11	37	15.8
I.	Occult.	Reapp.	W.	27	14	58	
I.	Shadow	Ingress		28	8	50	
II.	Eclipse	Disapp.		28	9	29	17.7
I.	Transit	Ingress		28	10	1	
I.	Shadow	Egress		28	11	2	
III.	Eclipse	Disapp.		28	11	9	11.7
II.	Eclipse	Reapp.		28	11	44	12.3
II.	Occult.	Disapp.		28	11	50	
I.	Transit	Egress		28	12	12	
III.	Eclipse	Reapp.		28	13	3	0.1
II.	Occult.	Reapp.		28	14	8	
III.	Occult.	Disapp.	W.	28	15	56	
III.	Occult.	Reapp.	W.	28	17	54	
I.	Eclipse	Disapp.		29	6	5	33.5
I.	Occult.	Reapp.		29	9	27	
I.	Shadow	Ingress		30	3	18	
II.	Shadow	Ingress		30	4	8	
I.	Transit	Ingress		30	4	30	
I.	Shadow	Egress		30	5	30	
II.	Shadow	Egress		30	6	30	
II.	Transit	Ingress		30	6	31	
I.	Transit	Egress		30	6	41	
II.	Transit	Egress		30	8	50	
I.	Eclipse	Disapp.		31	0	33	58.9
I.	Occult.	Reapp.		31	3	56	
I.	Shadow	Ingress		31	21	46	
II.	Eclipse	Disapp.		31	22	45	43.2
I.	Transit	Ingress		31	22	59	
I.	Shadow	Egress		31	23	58	

WASHINGTON MEAN TIME.

JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



FEBRUARY.

				d	h	m	s				d	h	m	s
III.	Shadow	Ingress		1	0	55		III.	Occult.	Disapp.	4	20	3	
II.	Eclipse	Reapp.		1	1	0	35.6	III.	Occult.	Reapp.	4	22	0	
II.	Occult.	Disapp.		1	1	7		I.	Eclipse	Disapp.	5	7	59	1.7
I.	Transit	Egress		1	1	10		I.	Occult.	Reapp.	5	11	23	
III.	Shadow	Egress		1	3	4		I.	Shadow.	Ingress	6	5	10	
II.	Occult.	Reapp.		1	3	25		I.	Transit	Ingress	6	6	24	
III.	Transit	Ingress		1	5	54		II.	Shadow	Ingress	6	6	44	
III.	Transit	Egress		1	7	52		I.	Shadow	Egress	6	7	22	
I.	Eclipse	Disapp.		1	19	2	18.7	I.	Transit	Egress	6	8	35	
I.	Occult.	Reapp.		1	22	25		II.	Shadow	Egress	6	9	6	
I.	Shadow	Ingress	W.	2	16	14		II.	Transit	Ingress	6	9	10	
II.	Shadow	Ingress	W.	2	17	26		II.	Transit	Egress	6	11	29	
I.	Transit	Ingress	W.	2	17	28		I.	Eclipse	Disapp.	7	2	27	26.8
I.	Shadow	Egress		2	18	26		I.	Occult.	Reapp.	7	5	51	
I.	Transit	Egress		2	19	39		I.	Shadow	Ingress	7	23	39	
II.	Shadow	Egress		2	19	48		I.	Transit	Ingress	8	0	53	
II.	Transit	Ingress		2	19	51		II.	Eclipse	Disapp.	8	1	18	33.2
II.	Transit	Egress		2	22	10		I.	Shadow	Egress	8	1	51	
I.	Eclipse	Disapp.		3	13	30	44.3	I.	Transit	Egress	8	3	4	
I.	Occult.	Reapp.	W.	3	16	54		II.	Eclipse	Reapp.	8	3	33	21.8
I.	Shadow	Ingress		4	10	42		II.	Occult.	Disapp.	8	3	43	
I.	Transit	Ingress		4	11	56		III.	Shadow	Ingress	8	4	52	
II.	Eclipse	Disapp.		4	12	2	7.4	II.	Occult.	Reapp.	8	6	0	
I.	Shadow	Egress		4	12	54		III.	Shadow	Egress	8	7	1	
I.	Transit	Egress		4	14	7		III.	Transit	Ingress	8	9	58	
II.	Eclipse	Reapp.	W.	4	14	16	57.8	III.	Transit	Egress	8	11	53	
II.	Occult.	Disapp.	W.	4	14	26		I.	Eclipse	Disapp.	8	20	55	46.3
III.	Eclipse	Disapp.	W.	4	15	6	48.8	I.	Occult.	Reapp.	9	0	20	
II.	Occult.	Reapp.	W.	4	16	44		I.	Shadow	Ingress	9	18	7	
III.	Eclipse	Reapp.	W.	4	17	0	25.0	I.	Transit	Ingress	9	19	22	

WASHINGTON MEAN TIME.

FEBRUARY.

				d	h	m	s
II.	Shadow	Ingress		9	20	1	
I.	Shadow	Egress		9	20	19	
I.	Transit	Egress		9	21	33	
II.	Shadow	Egress		9	22	23	
II.	Transit	Ingress		9	22	29	
II.	Transit	Egress		10	0	47	
I.	Eclipse	Disapp.	W.	10	15	24	11.5
I.	Occult.	Reapp.		10	18	49	
I.	Shadow	Ingress		11	12	35	
I.	Transit	Ingress	W.	11	13	50	
II.	Eclipse	Disapp.	W.	11	14	34	57,7
I.	Shadow	Egress	W.	11	14	47	
I.	Transit	Egress	W.	11	16	1	
II.	Eclipse	Reapp.	W.	11	16	49	44,7
II.	Occult.	Disapp.	W.	11	17	1	
III.	Eclipse	Disapp.		11	19	5	0,7
II.	Occult.	Reapp.		11	19	18	
III.	Eclipse	Reapp.		11	20	58	26,5
III.	Occult.	Disapp.		12	0	6	
III.	Occult.	Reapp.		12	2	0	
I.	Eclipse	Disapp.		12	9	52	29,0
I.	Occult.	Reapp.		12	13	18	
I.	Shadow	Ingress		13	7	3	
I.	Transit	Ingress		13	8	18	
I.	Shadow	Egress		13	9	15	
II.	Shadow	Ingress		13	9	19	
I.	Transit	Egress		13	10	29	
II.	Shadow	Egress		13	11	41	
II.	Transit	Ingress		13	11	48	
II.	Transit	Egress	W.	13	14	6	
I.	Eclipse	Disapp.		14	4	20	53.5
I.	Occult.	Reapp.		14	7	47	
I.	Shadow	Ingress		15	1	32	
I.	Transit	Ingress		15	2	46	
I.	Shadow	Egress		15	3	44	
II.	Eclipse	Disapp.		15	3	51	24.5
I.	Transit	Egress		15	4	57	
II.	Eclipse	Reapp		15	6	6	9.9
II.	Occult.	Disapp.		15	6	18	
II.	Occult.	Reapp.		15	8	34	
III.	Shadow	Ingress		15	8	50	
III.	Shadow	Egress		15	10	57	
III.	Transit	Ingress	W.	15	13	59	
III.	Transit	Egress	W.	15	15	50	
I.	Eclipse	Disapp.		15	22	49	12,6
I.	Occult.	Reapp.		16	2	15	
I.	Shadow	Ingress		16	20	0	
I.	Transit	Ingress		16	21	14	
I.	Shadow	Egress		16	22	12	
II.	Shadow	Ingress		16	22	37	
I.	Transit	Egress		16	23	25	
II.	Shadow	Egress		17	0	58	
II.	Transit	Ingress		17	1	6	
II.	Transit	Egress		17	3	23	
I.	Eclipse	Disapp.	W.	17	17	17	37.7
I.	Occult.	Reapp.		17	20	43	
I.	Shadow	Ingress	W.	18	14	28	
I.	Transit	Ingress	W.	18	15	42	
I.	Shadow	Egress	W.	18	16	40	
II.	Eclipse	Disapp.	W.	18	17	7	50.3
I.	Transit	Egress		18	17	53	
II.	Eclipse	Reapp.		18	19	22	34.1
II.	Occult.	Disapp.		18	19	34	
II.	Occult.	Reapp.		18	21	51	
III.	Eclipse	Disapp.		18	23	2	35.8
III.	Eclipse	Reapp.		19	0	55	52.8
III.	Occult.	Disapp.		19	4	6	
III.	Occult.	Reapp.		19	5	56	
I.	Eclipse	Disapp.		19	11	45	55.0
I.	Occult.	Reapp.	W.	19	15	11	
I.	Shadow	Ingress		20	8	56	
I.	Transit	Ingress		20	10	10	
I.	Shadow	Egress		20	11	8	
II.	Shadow	Ingress		20	11	55	
I.	Transit	Egress		20	12	21	
II.	Shadow	Egress	W.	20	14	16	
II.	Transit	Ingress	W.	20	14	24	
II.	Transit	Egress	W.	20	16	41	
I.	Eclipse	Disapp.		21	6	14	19.4
I.	Occult.	Reapp.		21	9	39	
I.	Shadow	Ingress		22	3	24	
I.	Transit	Ingress		22	4	38	
I.	Shadow	Egress		22	5	36	
II.	Eclipse	Disapp.		22	6	24	18,7
I.	Transit	Egress		22	6	49	
II.	Eclipse	Reapp.		22	8	39	1.3
II.	Occult.	Disapp.		22	8	50	
II.	Occult.	Reapp.		22	11	6	
III.	Shadow	Ingress		22	12	46	
III.	Shadow	Egress	W.	22	14	55	
III.	Transit	Ingress		22	17	55	
III.	Transit	Egress		22	19	45	
I.	Eclipse	Disapp.		23	0	42	38,8
I.	Occult.	Reapp.		23	4	7	
I.	Shadow	Ingress		23	21	52	
I.	Transit	Ingress		23	23	6	
I.	Shadow	Egress		24	0	4	
II.	Shadow	Ingress		24	1	13	

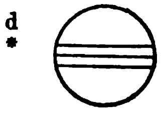
WASHINGTON MEAN TIME.

FEBRUARY.

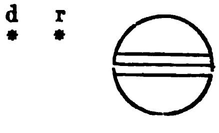
			d	h	m	s
I.	Transit	Egress	24	1	17	
II.	Shadow	Egress	24	3	34	
II.	Transit	Ingress	24	3	41	
II.	Transit	Egress	24	5	58	
I.	Eclipse	Disapp.	24	19	11	4.0
I.	Occult.	Reapp.	24	22	35	
I.	Shadow	Ingress W.	25	16	21	
I.	Transit	Ingress W.	25	17	34	
I.	Shadow	Egress	25	18	33	
II.	Eclipse	Disapp.	25	19	40	46.4
I.	Transit	Egress	25	19	45	
II.	Eclipse	Reapp.	25	21	55	28.0
II.	Occult.	Disapp.	25	22	6	
II.	Occult.	Reapp.	26	0	22	
III.	Eclipse	Disapp.	26	3	0	12.7
III.	Eclipse	Reapp.	26	4	53	22.5
III.	Occult.	Disapp.	26	8	0	
III.	Occult.	Reapp.	26	9	50	
I.	Eclipse	Disapp. W.	26	13	39	21.4
I.	Occult.	Reapp. W.	26	17	3	
I.	Shadow	Ingress	27	10	49	
I.	Transit	Ingress	27	12	2	
I.	Shadow	Egress W.	27	13	1	
I.	Transit	Egress W.	27	14	13	
II.	Shadow	Ingress W.	27	14	31	
II.	Shadow	Egress W.	27	16	52	
II.	Transit	Ingress W.	27	16	58	
II.	Transit	Egress	27	19	14	
I.	Eclipse	Disapp.	28	8	7	45.9
I.	Occult.	Reapp.	28	11	31	
I.	Shadow	Ingress	29	5	17	
I.	Transit	Ingress	29	6	30	
I.	Shadow	Egress	29	7	29	
I.	Transit	Egress	29	8	41	
II.	Eclipse	Disapp.	29	8	57	16.9
II.	Eclipse	Reapp.	29	11	11	57.5
II.	Occult.	Disapp.	29	11	21	
II.	Occult.	Reapp. W.	29	13	37	
III.	Shadow	Ingress W.	29	16	44	
III.	Shadow	Egress	29	18	52	
III.	Transit	Ingress	29	21	47	
III.	Transit	Egress	29	23	35	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

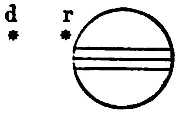
I.



III.



II.



IV. *Not Eclipsed.*

MARCH.

			d	h	m	s
I.	Eclipse	Disapp.	1	2	36	5.3
I.	Occult.	Reapp.	1	5	59	
I.	Shadow	Ingress	1	23	45	
I.	Transit	Ingress	2	0	58	
I.	Shadow	Egress	2	1	57	
I.	Transit	Egress	2	3	9	
II.	Shadow	Ingress	2	3	48	
II.	Shadow	Egress	2	6	9	
II.	Transit	Ingress	2	6	14	
II.	Transit	Egress	2	8	30	
I.	Eclipse	Disapp.	2	21	4	30.8
I.	Occult.	Reapp.	3	0	27	
I.	Shadow	Ingress	3	18	13	
I.	Transit	Ingress	3	19	26	
I.	Shadow	Egress	3	20	25	
I.	Transit	Egress	3	21	37	

WASHINGTON MEAN TIME.

MARCH.

				d	h	m	s					d	h	m	s
II.	Eclipse	Disapp.		3	22	13	47.7	II.	Eclipse	Reapp.		11	3	1	33.8
II.	Eclipse	Reapp		4	0	28	27.3	II.	Occult.	Disapp.		11	3	3	
II.	Occult.	Disapp.		4	0	35		II.	Occult.	Reapp.		11	5	18	
II.	Occult.	Reapp.		4	2	51		III.	Eclipse	Disapp.		11	10	54	41.6
III.	Eclipse	Disapp.		4	6	57	26.7	III.	Eclipse	Reapp.	W.	11	12	47	42.2
III.	Eclipse	Reapp.		4	8	50	31.1	III.	Occult.	Disapp.	W.	11	15	36	
III.	Occult.	Disapp.		4	11	50		III.	Occult.	Reapp.	W.	11	17	20	
III.	Occult.	Reapp.	W.	4	13	36		I.	Eclipse	Disapp.	W.	11	17	26	16.4
I.	Eclipse	Disapp.	W.	4	15	32	48.3	I.	Occult.	Reapp.		11	20	44	
I.	Occult.	Reapp.		4	18	55		I.	Shadow	Ingress	W.	12	14	34	
I.	Shadow	Ingress	W.	5	12	42		I.	Transit	Ingress	W.	12	15	42	
I.	Transit	Ingress	W.	5	13	54		I.	Shadow	Egress	W.	12	16	46	
I.	Shadow	Egress	W.	5	14	54		I.	Transit	Egress		12	17	53	
I.	Transit	Egress	W.	5	16	5		II.	Shadow	Ingress		12	19	42	
II.	Shadow	Ingress	W.	5	17	6		II.	Transit	Ingress		12	21	58	
II.	Shadow	Egress		5	19	27		II.	Shadow	Egress		12	22	3	
II.	Transit	Ingress		5	19	29		II.	Transit	Egress		13	0	14	
II.	Transit	Egress		5	21	45		I.	Eclipse	Disapp.	W.	13	11	54	41.3
I.	Eclipse	Disapp.		6	10	1	13.0	I.	Occult.	Reapp.	W.	13	15	11	
I.	Occult.	Reapp.	W.	6	13	23		I.	Shadow	Ingress		14	9	3	
I.	Shadow	Ingress		7	7	10		I.	Transit	Ingress		14	10	9	
I.	Transit	Ingress		7	8	21		I.	Shadow	Egress		14	11	15	
I.	Shadow	Egress		7	9	22		I.	Transit	Egress	W.	14	12	20	
I.	Transit	Egress		7	10	32		II.	Eclipse	Disapp.	W.	14	14	3	31.5
II.	Eclipse	Disapp.		7	11	30	20.8	II.	Occult.	Reapp.		14	18	30	
II.	Eclipse	Reapp.	W.	7	13	44	59.8	III.	Shadow	Ingress		15	0	39	
II.	Occult.	Disapp.	W.	7	13	49		III.	Shadow	Egress		15	2	47	
II.	Occult.	Reapp.	W.	7	16	5		III.	Transit	Ingress		15	5	20	
III.	Shadow	Ingress		7	20	42		I.	Eclipse	Disapp.		15	6	23	1.5
III.	Shadow	Egress		7	22	50		III.	Transit	Egress		15	7	2	
III.	Transit	Ingress		8	1	36		I.	Occult.	Reapp.		15	9	39	
III.	Transit	Egress		8	3	21		I.	Shadow	Ingress		16	3	31	
I.	Eclipse	Disapp.		8	4	29	32.5	I.	Transit	Ingress		16	4	36	
I.	Occult.	Reapp.		8	7	50		I.	Shadow	Egress		16	5	43	
I.	Shadow	Ingress		9	1	38		I.	Transit	Egress		16	6	47	
I.	Transit	Ingress		9	2	48		II.	Shadow	Ingress		16	9	0	
I.	Shadow	Egress		9	3	50		II.	Transit	Ingress		16	11	12	
I.	Transit	Egress		9	4	59		II.	Shadow	Egress		16	11	21	
II.	Shadow	Ingress		9	6	24		II.	Transit	Egress	W.	16	13	27	
II.	Transit	Ingress		9	8	44		I.	Eclipse	Disapp.		17	0	51	27.5
II.	Shadow	Egress		9	8	45		I.	Occult.	Reapp.		17	4	6	
II.	Transit	Egress		9	11	0		I.	Shadow	Ingress		17	21	59	
I.	Eclipse	Disapp.		9	22	57	58.2	I.	Transit	Ingress		17	23	3	
I.	Occult.	Reapp.		10	2	17		I.	Shadow	Egress		18	0	11	
I.	Shadow	Ingress		10	20	6		I.	Transit	Egress		18	1	14	
I.	Transit	Ingress		10	21	15		II.	Eclipse	Disapp.		18	3	20	11.0
I.	Shadow	Egress		10	22	18		II.	Occult.	Reapp.		18	7	42	
I.	Transit	Egress		10	23	26		III.	Eclipse	Disapp.	W.	18	14	52	20.6
II.	Eclipse	Disapp.		11	0	46	55.2	III.	Eclipse	Reapp.	W.	18	16	45	19.2

WASHINGTON MEAN TIME.

MARCH.

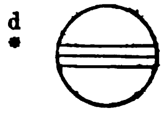
				d	h	m	s					d	h	m	s
III.	Occult.	Disapp.		18	19	17		II.	Eclipse	Disapp.		25	5	53	36.8
I.	Eclipse	Disapp.		18	19	19	46.2	II.	Occult.	Reapp.		25	10	5	
III.	Occult.	Reapp.		18	21	0		III.	Eclipse	Disapp.		25	18	50	0.4
I.	Occult.	Reapp.		18	22	33		III.	Eclipse	Reapp.		25	20	42	58.6
I.	Shadow	Ingress	W.	19	16	28		I.	Eclipse	Disapp.		25	21	13	18.7
I.	Transit	Ingress		19	17	30		III.	Occult.	Disapp.		25	22	54	
I.	Shadow	Egress		19	18	40		I.	Occult.	Reapp.		26	0	21	
I.	Transit	Egress		19	19	41		III.	Occult.	Reapp.		26	0	35	
II.	Shadow	Ingress		19	22	18		I.	Shadow	Ingress		26	18	21	
II.	Transit	Ingress		20	0	25		I.	Transit	Ingress		26	19	18	
II.	Shadow	Egress		20	0	39		I.	Shadow	Egress		26	20	33	
II.	Transit	Egress		20	2	40		I.	Transit	Egress		26	21	29	
I.	Eclipse	Disapp.	W.	20	13	48	11.4	II.	Shadow	Ingress		27	0	53	
I.	Occult.	Reapp.	W.	20	17	0		II.	Transit	Ingress		27	2	49	
I.	Shadow	Ingress		21	10	56		II.	Shadow	Egress		27	3	14	
I.	Transit	Ingress	W.	21	11	57		II.	Transit	Egress		27	5	4	
I.	Shadow	Egress	W.	21	13	8		I.	Eclipse	Disapp.	W.	27	15	41	43.6
I.	Transit	Egress	W.	21	14	8		I.	Occult.	Reapp.		27	18	48	
II.	Eclipse	Disapp.	W.	21	16	36	51.7	I.	Shadow	Ingress	W.	28	12	49	
II.	Occult.	Reapp.		21	20	54		I.	Transit	Ingress	W.	28	13	45	
III.	Shadow	Ingress		22	4	37		I.	Shadow	Egress	W.	28	15	1	
III.	Shadow	Egress		22	6	45		I.	Transit	Egress	W.	28	15	56	
I.	Eclipse	Disapp.		22	8	16	32.2	II.	Eclipse	Disapp.		28	19	10	22.1
III.	Transit	Ingress		22	8	58		II.	Occult.	Reapp.		28	23	16	
III.	Transit	Egress		22	10	39		III.	Shadow	Ingress		29	8	34	
I.	Occult.	Reapp.		22	11	27		I.	Eclipse	Disapp.		29	10	10	5.8
I.	Shadow	Ingress		23	5	24		III.	Shadow	Egress		29	10	42	
I.	Transit	Ingress		23	6	24		III.	Transit	Ingress	W.	29	12	32	
I.	Shadow	Egress		23	7	36		I.	Occult.	Reapp.	W.	29	13	15	
I.	Transit	Egress		23	8	35		III.	Transit	Egress	W.	29	14	11	
II.	Shadow	Ingress	W.	23	11	36		I.	Shadow	Ingress		30	7	17	
II.	Transit	Ingress	W.	23	13	37		I.	Transit	Ingress		30	8	12	
II.	Shadow	Egress	W.	23	13	57		I.	Shadow	Egress		30	9	29	
II.	Transit	Egress	W.	23	15	52		I.	Transit	Egress		30	10	23	
I.	Eclipse	Disapp.		24	2	44	59.0	II.	Shadow	Ingress	W.	30	14	11	
I.	Occult.	Reapp.		24	5	54		II.	Transit	Ingress	W.	30	16	1	
I.	Shadow	Ingress		24	23	53		II.	Shadow	Egress	W.	30	16	32	
I.	Transit	Ingress		25	0	51		II.	Transit	Egress		30	18	16	
I.	Shadow	Egress		25	2	5		I.	Eclipse	Disapp.		31	4	38	33.2
I.	Transit	Egress		25	3	2		I.	Occult.	Reapp.		31	7	42	

WASHINGTON MEAN TIME.

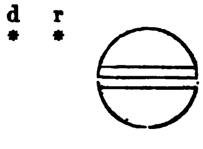
MARCH.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

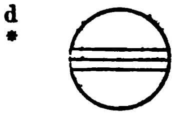
I.



III.



II.



IV. *Not Eclipsed.*

APRIL.

				d	h	m	s
I.	Shadow	Ingress		1	1	46	
I.	Transit	Ingress		1	2	39	
I.	Shadow	Egress		1	3	58	
I.	Transit	Egress		1	4	50	
II.	Eclipse	Disapp.		1	8	27	14.2
II.	Occult.	Reapp.	W.	1	12	26	
III.	Eclipse	Disapp.		1	22	48	19.5
I.	Eclipse	Disapp.		1	23	6	53.7
III.	Eclipse	Reapp.		2	0	41	18.9
I.	Occult.	Reapp.		2	2	9	
III.	Occult.	Disapp.		2	2	26	
III.	Occult.	Reapp.		2	4	5	
I.	Shadow	Ingress		2	20	14	
I.	Transit	Ingress		2	21	6	
I.	Shadow	Egress		2	22	26	
I.	Transit	Egress		2	23	17	
II.	Shadow	Ingress		3	3	28	
II.	Transit	Ingress		3	5	12	
II.	Shadow	Egress		3	5	49	
II.	Transit	Egress		3	7	27	
I.	Eclipse	Disapp.		3	17	35	20.2
I.	Occult.	Reapp.		3	20	36	
I.	Shadow	Ingress	W.	4	14	42	
I.	Transit	Ingress	W.	4	15	33	
I.	Shadow	Egress	W.	4	16	54	
I.	Transit	Egress		4	17	44	
II.	Eclipse	Disapp.		4	21	44	3.8
II.	Occult.	Reapp.		5	1	36	
I.	Eclipse	Disapp.	W.	5	12	3	42.7
III.	Shadow	Ingress	W.	5	12	31	
III.	Shadow	Egress	W.	5	14	40	
I.	Occult.	Reapp.	W.	5	15	3	
III.	Transit	Ingress	W.	5	16	1	
III.	Transit	Egress		5	17	40	
I.	Shadow	Ingress		6	9	11	
I.	Transit	Ingress		6	10	0	
I.	Shadow	Egress	W.	6	11	23	
I.	Transit	Egress	W.	6	12	11	
II.	Shadow	Ingress	W.	6	16	46	
II.	Transit	Ingress		6	18	23	
II.	Shadow	Egress		6	19	7	
II.	Transit	Egress		6	20	38	
I.	Eclipse	Disapp.		7	6	32	11.3
I.	Occult.	Reapp.		7	9	30	
I.	Shadow	Ingress		8	3	39	
I.	Transit	Ingress		8	4	27	
I.	Shadow	Egress		8	5	51	
I.	Transit	Egress		8	6	38	
II.	Eclipse	Disapp.	W.	8	11	1	2.8
II.	Occult.	Reapp.	W.	8	14	46	
I.	Eclipse	Disapp.		9	1	0	32.8
III.	Eclipse	Disapp.		9	2	46	6.1
I.	Occult.	Reapp.		9	3	56	
III.	Eclipse	Reapp.		9	4	39	8.5
III.	Occult.	Disapp.		9	5	53	
III.	Occult.	Reapp.		9	7	32	
I.	Shadow	Ingress		9	22	7	
I.	Transit	Ingress		9	22	53	
I.	Shadow	Egress		10	0	19	
I.	Transit	Egress		10	1	4	

WASHINGTON MEAN TIME.

APRIL.

				d	h	m	s
II.	Shadow	Ingress		10	6	4	
II.	Transit	Ingress		10	7	33	
II.	Shadow	Egress		10	8	25	
II.	Transit	Egress		10	9	48	
I.	Eclipse	Disapp.		10	19	29	0.3
I.	Occult.	Reapp.		10	22	22	
I.	Shadow	Ingress	W.	11	16	36	
I.	Transit	Ingress		11	17	19	
I.	Shadow	Egress		11	18	48	
I.	Transit	Egress		11	19	30	
II.	Eclipse	Disapp.		12	0	17	58.1
II.	Occult.	Reapp.		12	3	55	
I.	Eclipse	Disapp.	W.	12	13	57	23.8
III.	Shadow	Ingress	W.	12	16	29	
I.	Occult.	Reapp.	W.	12	16	48	
III.	Shadow	Egress		12	18	37	
III.	Transit	Ingress		12	19	26	
III.	Transit	Egress		12	21	5	
I.	Shadow	Ingress	W.	13	11	4	
I.	Transit	Ingress	W.	13	11	45	
I.	Shadow	Egress	W.	13	13	16	
I.	Transit	Egress	W.	13	13	56	
II.	Shadow	Ingress		13	19	21	
II.	Transit	Ingress		13	20	42	
II.	Shadow	Egress		13	21	42	
II.	Transit	Egress		13	22	57	
I.	Eclipse	Disapp.		14	8	25	53.3
I.	Occult.	Reapp.	W.	14	11	14	
I.	Shadow	Ingress		15	5	32	
I.	Transit	Ingress		15	6	11	
I.	Shadow	Egress		15	7	44	
I.	Transit	Egress		15	8	22	
II.	Eclipse	Disapp.	W.	15	13	35	5.9
II.	Occult.	Reapp.		15	17	4	
I.	Eclipse	Disapp.		16	2	54	16.3
I.	Occult.	Reapp.		16	5	40	
III.	Eclipse	Disapp.		16	6	43	58.2
III.	Eclipse	Reapp.		16	8	37	5.0
III.	Occult.	Disapp.		16	9	17	
III.	Occult.	Reapp.	W.	16	10	56	
I.	Shadow	Ingress		17	0	0	
I.	Transit	Ingress		17	0	37	
I.	Shadow	Egress		17	2	12	
I.	Transit	Egress		17	2	48	
II.	Shadow	Ingress		17	8	39	
II.	Transit	Ingress	W.	17	9	51	
II.	Shadow	Egress	W.	17	11	0	
II.	Transit	Egress	W.	17	12	6	
I.	Eclipse	Disapp.		17	21	22	44.5
I.	Occult.	Reapp.		18	0	6	
I.	Shadow	Ingress		18	18	29	
I.	Transit	Ingress		18	19	3	
I.	Shadow	Egress		18	20	41	
I.	Transit	Egress		18	21	14	
II.	Eclipse	Disapp.		19	2	52	6.5
II.	Occult.	Reapp.		19	6	12	
I.	Eclipse	Disapp.	W.	19	15	51	9.3
I.	Occult.	Reapp.		19	18	33	
III.	Shadow	Ingress		19	20	27	
III.	Shadow	Egress		19	22	35	
III.	Transit	Ingress		19	22	48	
III.	Transit	Egress		20	0	28	
I.	Shadow	Ingress	W.	20	12	57	
I.	Transit	Ingress	W.	20	13	29	
I.	Shadow	Egress	W.	20	15	9	
I.	Transit	Egress	W.	20	15	40	
II.	Shadow	Ingress		20	21	56	
II.	Transit	Ingress		20	22	59	
II.	Shadow	Egress		21	0	17	
II.	Transit	Egress		21	1	14	
I.	Eclipse	Disapp.	W.	21	10	19	39.8
I.	Occult.	Reapp.	W.	21	12	59	
I.	Shadow	Ingress		22	7	26	
I.	Transit	Ingress		22	7	55	
I.	Shadow	Egress	W.	22	9	38	
I.	Transit	Egress	W.	22	10	6	
II.	Eclipse	Disapp.	W.	22	16	9	22.9
II.	Occult.	Reapp.		22	19	20	
I.	Eclipse	Disapp.		23	4	48	4.3
I.	Occult.	Reapp.		23	7	25	
III.	Eclipse	Disapp.	W.	23	10	41	34.0
III.	Eclipse	Reapp.	W.	23	12	34	47.0
III.	Occult.	Disapp.	W.	23	12	37	
III.	Occult.	Reapp.	W.	23	14	17	
I.	Shadow	Ingress		24	1	54	
I.	Transit	Ingress		24	2	21	
I.	Shadow	Egress		24	4	6	
I.	Transit	Egress		24	4	32	
II.	Shadow	Ingress	W.	24	11	14	
II.	Transit	Ingress	W.	24	12	7	
II.	Shadow	Egress	W.	24	13	35	
II.	Transit	Egress	W.	24	14	22	
I.	Eclipse	Disapp.		24	23	16	33.8
I.	Occult.	Reapp.		25	1	51	
I.	Shadow	Ingress		25	20	23	
I.	Transit	Ingress		25	20	47	
I.	Shadow	Egress		25	22	35	
I.	Transit	Egress		25	22	58	

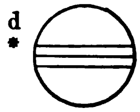
WASHINGTON MEAN TIME.

APRIL.

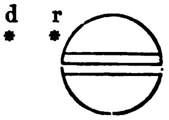
				d	h	m	s					d	h	m	s
II.	Eclipse	Disapp.		26	5	26	29.6	II.	Shadow	Egress		28	2	53	
II.	Occult.	Reapp.		26	8	28		II.	Transit	Egress		28	3	30	
I.	Eclipse	Disapp.		26	17	44	59.8	I.	Eclipse	Disapp.	W.	28	12	13	31.7
I.	Occult.	Reapp.		26	20	17		I.	Occult.	Reapp.	W.	28	14	43	
III.	Shadow	Ingress		27	0	25		I.	Shadow	Ingress	W.	29	9	20	
III.	Transit	Ingress		27	2	8		I.	Transit	Ingress	W.	29	9	39	
III.	Shadow	Egress		27	2	34		I.	Shadow	Egress	W.	29	11	32	
III.	Transit	Egress		27	3	48		I.	Transit	Egress	W.	29	11	50	
I.	Shadow	Ingress	W.	27	14	51		II.	Eclipse	Disapp.		29	18	43	55.7
I.	Transit	Ingress	W.	27	15	13		II.	Occult.	Reapp.		29	21	35	
I.	Shadow	Egress		27	17	3		I.	Eclipse	Disapp.		30	6	41	57.4
I.	Transit	Egress		27	17	24		I.	Occult.	Reapp.	W.	30	9	9	
II.	Shadow	Ingress		28	0	32		III.	Eclipse	Disapp.	W.	30	14	39	16.3
II.	Transit	Ingress		28	1	15		III.	Occult.	Reapp.		30	17	36	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

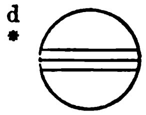
I.



III.



II.



IV. *Not Eclipsed.*

MAY.

				d	h	m	s					d	h	m	s
I.	Shadow	Ingress		1	3	48		II.	Occult.	Reapp.		3	10	43	
I.	Transit	Ingress		1	4	5		I.	Eclipse	Disapp.		3	19	38	55.6
I.	Shadow	Egress		1	6	0		I.	Occult.	Reapp.		3	22	1	
I.	Transit	Egress		1	6	16		III.	Shadow	Ingress		4	4	23	
II.	Shadow	Ingress	W.	1	13	49		III.	Transit	Ingress		4	5	24	
II.	Transit	Ingress	W.	1	14	23		III.	Shadow	Egress		4	6	32	
II.	Shadow	Egress	W.	1	16	10		III.	Transit	Egress		4	7	7	
II.	Transit	Egress		1	16	38		I.	Shadow	Ingress		4	16	45	
I.	Eclipse	Disapp.		2	1	10	28.1	I.	Transit	Ingress		4	16	57	
I.	Occult.	Reapp.		2	3	35		I.	Shadow	Egress		4	18	57	
I.	Shadow	Ingress		2	22	17		I.	Transit	Egress		4	19	8	
I.	Transit	Ingress		2	22	31		II.	Shadow	Ingress		5	3	7	
I.	Shadow	Egress		3	0	29		II.	Transit	Ingress		5	3	31	
I.	Transit	Egress		3	0	42		II.	Shadow	Egress		5	5	28	
II.	Eclipse	Disapp.		3	8	1	8.3	II.	Transit	Egress		5	5	46	

WASHINGTON MEAN TIME.

MAY.

				d	h	m	s
I.	Eclipse	Disapp.	W.	5	14	7	28.8
I.	Occult.	Reapp.	W.	5	16	27	
I.	Shadow	Ingress	W.	6	11	14	
I.	Transit	Ingress	W.	6	11	23	
I.	Shadow	Egress	W.	6	13	26	
I.	Transit	Egress	W.	6	13	34	
II.	Eclipse	Disapp.		6	21	18	44.4
II.	Occult.	Reapp.		6	23	50	
I.	Eclipse	Disapp.	W.	7	8	35	56.2
I.	Occult.	Reapp.	W.	7	10	53	
III.	Eclipse	Disapp.		7	18	37	28.8
III.	Occult.	Reapp.		7	20	54	
I.	Shadow	Ingress		8	5	42	
I.	Transit	Ingress		8	5	49	
I.	Shadow	Egress		8	7	54	
I.	Transit	Egress		8	8	0	
II.	Shadow	Ingress		8	16	24	
II.	Transit	Ingress		8	16	38	
II.	Shadow	Egress		8	18	45	
II.	Transit	Egress		8	18	53	
I.	Eclipse	Disapp.		9	3	4	28.0
I.	Occult.	Reapp.		9	5	19	
I.	Shadow	Ingress		10	0	11	
I.	Transit	Ingress		10	0	15	
I.	Shadow	Egress		10	2	23	
I.	Transit	Egress		10	2	26	
II.	Eclipse	Disapp.	W.	10	10	36	3.2
II.	Occult.	Reapp.	W.	10	12	57	
I.	Eclipse	Disapp.		10	21	32	57.0
I.	Occult.	Reapp.		10	23	45	
III.	Shadow	Ingress	W.	11	8	22	
III.	Transit	Ingress	W.	11	8	40	
III.	Shadow	Egress	W.	11	10	25	
III.	Transit	Egress	W.	11	10	30	
I.	Shadow	Ingress		11	18	39	
I.	Transit	Ingress		11	18	41	
I.	Shadow	Egress		11	20	51	
I.	Transit	Egress		11	20	52	
II.	Shadow	Ingress		12	5	42	
II.	Transit	Ingress		12	5	45	
II.	Shadow	Egress	W.	12	8	0	
II.	Transit	Egress	W.	12	8	3	
I.	Occult.	Disapp.	W.	12	16	0	
I.	Occult.	Reapp.		12	18	11	
I.	Shadow	Ingress	W.	13	13	7	
I.	Transit	Ingress	W.	13	13	7	
I.	Shadow	Egress	W.	13	15	18	
I.	Transit	Egress	W.	13	15	19	
II.	Occult.	Disapp.		13	23	50	
II.	Eclipse	Reapp.		14	2	8	50.2
I.	Occult.	Disapp.	W.	14	10	26	
I.	Eclipse	Reapp.	W.	14	12	37	29.4
III.	Occult.	Disapp.		14	22	26	
III.	Eclipse	Reapp.		15	0	29	25.2
I.	Transit	Ingress		15	7	32	
I.	Shadow	Ingress		15	7	36	
I.	Transit	Egress	W.	15	9	43	
I.	Shadow	Egress	W.	15	9	48	
II.	Transit	Ingress		15	18	52	
II.	Shadow	Ingress		15	19	0	
II.	Transit	Egress		15	21	8	
II.	Shadow	Egress		15	21	21	
I.	Occult.	Disapp.		16	4	52	
I.	Eclipse	Reapp.		16	7	6	2.3
I.	Transit	Ingress		17	1	58	
I.	Shadow	Ingress		17	2	4	
I.	Transit	Egress		17	4	9	
I.	Shadow	Egress		17	4	16	
II.	Occult.	Disapp.	W.	17	12	57	
II.	Eclipse	Reapp.	W.	17	15	26	17.4
I.	Occult.	Disapp.		17	23	18	
I.	Eclipse	Reapp.		18	1	34	32.4
III.	Transit	Ingress	W.	18	11	54	
III.	Shadow	Ingress	W.	18	12	20	
III.	Transit	Egress	W.	18	13	43	
III.	Shadow	Egress	W.	18	14	28	
I.	Transit	Ingress		18	20	24	
I.	Shadow	Ingress		18	20	33	
I.	Transit	Egress		18	22	35	
I.	Shadow	Egress		18	22	45	
II.	Transit	Ingress		19	7	59	
II.	Shadow	Ingress	W.	19	8	17	
II.	Transit	Egress	W.	19	10	15	
II.	Shadow	Egress	W.	19	10	38	
I.	Occult.	Disapp.		19	17	44	
I.	Eclipse	Reapp.		19	20	3	7.6
I.	Transit	Ingress	W.	20	14	50	
I.	Shadow	Ingress	W.	20	15	1	
I.	Transit	Egress		20	17	1	
I.	Shadow	Egress		20	17	13	
II.	Occult.	Disapp.		21	2	4	
II.	Eclipse	Reapp.		21	4	44	16.6
I.	Occult.	Disapp.	W.	21	12	10	
I.	Eclipse	Reapp.	W.	21	14	31	37.8
III.	Occult.	Disapp.		22	1	40	
III.	Eclipse	Reapp.		22	4	28	35.1
I.	Transit	Ingress	W.	22	9	16	
I.	Shadow	Ingress	W.	22	9	30	

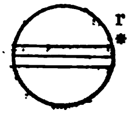
WASHINGTON MEAN TIME.

MAY.

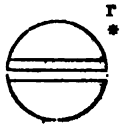
				d	h	m	s
I.	Transit	Egress	W.	22	11	27	
I.	Shadow	Egress	W.	22	11	42	
II.	Transit	Ingress		22	21	6	
II.	Shadow	Ingress		22	21	35	
II.	Transit	Egress		22	23	23	
II.	Shadow	Egress		22	23	56	
I.	Occult.	Disapp.		23	6	36	
I.	Eclipse	Reapp.	W.	23	9	0	12.0
I.	Transit	Ingress		24	3	42	
I.	Shadow	Ingress		24	3	58	
I.	Transit	Egress		24	5	53	
I.	Shadow	Egress		24	6	10	
II.	Occult.	Disapp.	W.	24	15	11	
II.	Eclipse	Reapp.		24	18	1	50.1
I.	Occult.	Disapp.		25	1	2	
I.	Eclipse	Reapp.		25	3	28	43.5
III.	Transit	Ingress	W.	25	15	11	
III.	Shadow	Ingress		25	16	18	
III.	Transit	Egress		25	17	2	
III.	Shadow	Egress		25	18	27	
I.	Transit	Ingress		25	22	8	
I.	Shadow	Ingress		25	22	27	
I.	Transit	Egress		26	0	19	
I.	Shadow	Egress		26	0	39	
II.	Transit	Ingress	W.	26	10	14	
II.	Shadow	Ingress	W.	26	10	52	
II.	Transit	Egress	W.	26	12	31	
II.	Shadow	Egress	W.	26	13	13	
I.	Occult.	Disapp.		26	19	28	
I.	Eclipse	Reapp.		26	21	57	20.3
I.	Transit	Ingress		27	16	34	
I.	Shadow	Ingress		27	16	55	
I.	Transit	Egress		27	18	45	
I.	Shadow	Egress		27	19	7	
II.	Occult.	Disapp.		28	4	19	
II.	Eclipse	Reapp.		28	7	19	59.8
I.	Occult.	Disapp.	W.	28	13	54	
I.	Eclipse	Reapp.		28	16	25	51.9
III.	Occult.	Disapp.		29	4	59	
III.	Eclipse	Reapp.	W.	29	8	27	15.9
I.	Transit	Ingress	W.	29	11	0	
I.	Shadow	Ingress	W.	29	11	24	
I.	Transit	Egress	W.	29	13	11	
I.	Shadow	Egress	W.	29	13	36	
II.	Transit	Ingress		29	23	21	
II.	Shadow	Ingress		30	0	10	
II.	Transit	Egress		30	1	38	
II.	Shadow	Egress		30	2	31	
I.	Occult.	Disapp.	W.	30	8	20	
I.	Eclipse	Reapp.	W.	30	10	54	27.5
I.	Transit	Ingress		31	5	26	
I.	Shadow	Ingress		31	5	53	
I.	Transit	Egress		31	7	37	
I.	Shadow	Egress	W.	31	8	5	
II.	Occult.	Disapp.		31	17	27	
II.	Eclipse	Reapp.		31	20	37	39.7

Phases of the Eclipses of the Satellites for an Inverting Telescope.

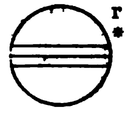
I.



III.



II.



IV. *Not Eclipsed.*

WASHINGTON MEAN TIME.

JUNE.

				d	h	m	s					d	h	m	s
I.	Occult.	Disapp.		1	2	46		I.	Transit	Ingress		9	1	37	
I.	Eclipse	Reapp.		1	5	23	0.5	I.	Shadow	Ingress		9	2	16	
III.	Transit	Ingress		1	18	30		III.	Shadow	Egress		9	2	25	
III.	Shadow	Ingress		1	20	17		I.	Transit	Egress		9	3	48	
III.	Transit	Egress		1	20	23		I.	Shadow	Egress		9	4	28	
III.	Shadow	Egress		1	22	26		II.	Transit	Ingress		9	14	45	
I.	Transit	Ingress		1	23	53		II.	Shadow	Ingress		9	16	2	
I.	Shadow	Ingress		2	0	22		II.	Transit	Egress		9	17	3	
I.	Transit	Egress		2	2	4		II.	Shadow	Egress		9	18	23	
I.	Shadow	Egress		2	2	34		I.	Occult.	Disapp.		9	22	56	
II.	Transit	Ingress	W.	2	12	29		I.	Eclipse	Reapp.		10	1	46	1.5
II.	Shadow	Ingress	W.	2	13	27		I.	Transit	Ingress		10	20	4	
II.	Transit	Egress		2	14	46		I.	Shadow	Ingress		10	20	45	
II.	Shadow	Egress		2	15	48		I.	Transit	Egress		10	22	15	
I.	Occult.	Disapp.		2	21	12		I.	Shadow	Egress		10	22	57	
I.	Eclipse	Reapp.		2	23	51	38.4	II.	Occult.	Disapp.	W.	11	8	53	
I.	Transit	Ingress		3	18	19		II.	Eclipse	Reapp.	W.	11	12	32	14.8
I.	Shadow	Ingress		3	18	50		I.	Occult.	Disapp.		11	17	23	
I.	Transit	Egress		3	20	30		I.	Eclipse	Reapp.		11	20	14	36.2
I.	Shadow	Egress		3	21	2		III.	Occult.	Disapp.	W.	12	11	38	
II.	Occult.	Disapp.		4	6	35		III.	Occult.	Reapp.	W.	12	13	37	
II.	Eclipse	Reapp.	W.	4	9	55	59.5	III.	Eclipse	Disapp.		12	14	29	56.9
I.	Occult.	Disapp.		4	15	38		I.	Transit	Ingress		12	14	31	
I.	Eclipse	Reapp.		4	18	20	11.7	I.	Shadow	Ingress		12	15	13	
III.	Occult.	Disapp.	W.	5	8	17		III.	Eclipse	Reapp.		12	16	24	37.3
III.	Occult.	Reapp.	W.	5	10	12		I.	Transit	Egress		12	16	42	
III.	Eclipse	Disapp.	W.	5	10	31	40.2	I.	Shadow	Egress		12	17	25	
III.	Eclipse	Reapp.	W.	5	12	26	3.4	II.	Transit	Ingress		13	3	54	
I.	Transit	Ingress	W.	5	12	45		II.	Shadow	Ingress		13	5	19	
I.	Shadow	Ingress	W.	5	13	19		II.	Transit	Egress		13	6	12	
I.	Transit	Egress		5	14	56		II.	Shadow	Egress		13	7	40	
I.	Shadow	Egress		5	15	31		I.	Occult.	Disapp.	W.	13	11	50	
II.	Transit	Ingress		6	1	37		I.	Eclipse	Reapp.		13	14	43	13.7
II.	Shadow	Ingress		6	2	45		I.	Transit	Ingress	W.	14	8	58	
II.	Transit	Egress		6	3	54		I.	Shadow	Ingress	W.	14	9	42	
II.	Shadow	Egress		6	5	6		I.	Transit	Egress	W.	14	11	9	
I.	Occult.	Disapp.	W.	6	10	4		I.	Shadow	Egress	W.	14	11	54	
I.	Eclipse	Reapp.	W.	6	12	48	48.1	II.	Occult.	Disapp.		14	22	2	
I.	Transit	Ingress		7	7	11		II.	Eclipse	Reapp.		15	1	50	6.0
I.	Shadow	Ingress		7	7	47		I.	Occult.	Disapp.		15	6	17	
I.	Transit	Egress	W.	7	9	22		I.	Eclipse	Reapp.	W.	15	9	11	49.2
I.	Shadow	Egress	W.	7	9	59		III.	Transit	Ingress		16	1	14	
II.	Occult.	Disapp.		7	19	44		III.	Transit	Egress		16	3	14	
II.	Eclipse	Reapp.		7	23	13	45.2	I.	Transit	Ingress		16	3	25	
I.	Occult.	Disapp.		8	4	30		I.	Shadow	Ingress		16	4	11	
I.	Eclipse	Reapp.		8	7	17	22.1	III.	Shadow	Ingress		16	4	15	
III.	Transit	Ingress		8	21	50		I.	Transit	Egress		16	5	36	
III.	Transit	Egress		8	23	47		I.	Shadow	Egress		16	6	23	
III.	Shadow	Ingress		9	0	16		III.	Shadow	Egress		16	6	24	

WASHINGTON MEAN TIME.

JUNE.

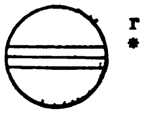
				d	h	m	s					d	h	m	s
II.	Transit	Ingress		16	17	3		II.	Shadow	Ingress		23	21	12	
II.	Shadow	Ingress		16	18	37		II.	Transit	Egress		23	21	42	
II.	Transit	Egress		16	19	22		II.	Shadow	Egress		23	23	33	
II.	Shadow	Egress		16	20	58		I.	Occult.	Disapp.		24	2	32	
I.	Occult.	Disapp.		17	0	44		I.	Eclipse	Reapp.		24	5	35	1.5
I.	Eclipse	Reapp.		17	3	40	29.2	I.	Transit	Ingress		24	23	40	
I.	Transit	Ingress		17	21	52		I.	Shadow	Ingress		25	0	35	
I.	Shadow	Ingress		17	22	40		I.	Transit	Egress		25	1	51	
I.	Transit	Egress		18	0	3		I.	Shadow	Egress		25	2	47	
I.	Shadow	Egress		18	0	52		II.	Occult.	Disapp.		25	13	34	
II.	Occult.	Disapp.	W.	18	11	12		II.	Eclipse	Reapp.		25	17	45	28.1
II.	Eclipse	Reapp.		18	15	8	44.6	I.	Occult.	Disapp.		25	20	59	
I.	Occult.	Disapp.		18	19	11		I.	Eclipse	Reapp.		26	0	3	38.9
I.	Eclipse	Reapp.		18	22	9	5.4	I.	Transit	Ingress		26	18	7	
III.	Occult.	Disapp.		19	15	3		III.	Occult.	Disapp.		26	18	32	
I.	Transit	Ingress		19	16	19		I.	Shadow	Ingress		26	19	3	
III.	Occult.	Reapp.		19	17	5		I.	Transit	Egress		26	20	18	
I.	Shadow	Ingress		19	17	9		III.	Occult.	Reapp.		26	20	37	
III.	Eclipse	Disapp.		19	18	28	20.8	I.	Shadow	Egress		26	21	15	
I.	Transit	Egress		19	18	30		III.	Eclipse	Disapp.		26	22	27	15.2
I.	Shadow	Egress		19	19	21		III.	Eclipse	Reapp.		27	0	22	34.6
III.	Eclipse	Reapp.		19	20	23	20.0	II.	Transit	Ingress	W.	27	8	33	
II.	Transit	Ingress		20	6	13		II.	Shadow	Ingress	W.	27	10	29	
II.	Shadow	Ingress		20	7	54		II.	Transit	Egress	W.	27	10	52	
II.	Transit	Egress	W.	20	8	32		II.	Shadow	Egress		27	12	51	
II.	Shadow	Egress	W.	20	10	15		I.	Occult.	Disapp.		27	15	26	
I.	Occult.	Disapp.		20	13	38		I.	Eclipse	Reapp.		27	18	32	17.9
I.	Eclipse	Reapp.		20	16	37	43.7	I.	Transit	Ingress	W.	28	12	34	
I.	Transit	Ingress	W.	21	10	46		I.	Shadow	Ingress		28	13	32	
I.	Shadow	Ingress	W.	21	11	37		I.	Transit	Egress		28	14	46	
I.	Transit	Egress	W.	21	12	57		I.	Shadow	Egress		28	15	44	
I.	Shadow	Egress		21	13	49		II.	Occult.	Disapp.		29	2	46	
II.	Occult.	Disapp.		22	0	23		II.	Eclipse	Reapp.		29	7	3	28.6
II.	Eclipse	Reapp.		22	4	26	40.7	I.	Occult.	Disapp.	W.	29	9	53	
I.	Occult.	Disapp.	W.	22	8	5		I.	Eclipse	Reapp.		29	13	0	55.5
I.	Eclipse	Reapp.	W.	22	11	6	20.3	I.	Transit	Ingress		30	7	1	
III.	Transit	Ingress		23	4	41		I.	Shadow	Ingress	W.	30	8	1	
I.	Transit	Ingress		23	5	13		III.	Transit	Ingress	W.	30	8	12	
I.	Shadow	Ingress		23	6	6		I.	Transit	Egress	W.	30	9	13	
III.	Transit	Egress		23	6	44		I.	Shadow	Egress	W.	30	10	13	
I.	Transit	Egress		23	7	24		III.	Transit	Egress	W.	30	10	20	
III.	Shadow	Ingress	W.	23	8	14		III.	Shadow	Ingress	W.	30	12	13	
I.	Shadow	Egress	W.	23	8	18		III.	Shadow	Egress		30	14	23	
III.	Shadow	Egress	W.	23	10	24		II.	Transit	Ingress		30	21	44	
II.	Transit	Ingress		23	19	23		II.	Shadow	Ingress		30	23	46	

WASHINGTON MEAN TIME.

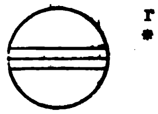
JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

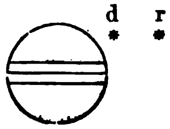
I.



II.



III.



IV. *Not Eclipsed.*

JULY.

				d	h	m	s
II.	Transit	Egress		1	0	3	
II.	Shadow	Egress		1	2	8	
I.	Occult.	Disapp.		1	4	20	
I.	Eclipse	Reapp.		1	7	29	36.9
I.	Transit	Ingress		2	1	28	
I.	Shadow	Ingress		2	2	29	
I.	Transit	Egress		2	3	40	
I.	Shadow	Egress		2	4	41	
II.	Occult.	Disapp.		2	15	58	
II.	Eclipse	Reapp.		2	20	22	23.4
I.	Occult.	Disapp.		2	22	47	
I.	Eclipse	Reapp.		3	1	58	15.4
I.	Transit	Ingress		3	19	55	
I.	Shadow	Ingress		3	20	58	
III.	Occult.	Disapp.		3	22	5	
I.	Transit	Egress		3	22	7	
I.	Shadow	Egress		3	23	10	
III.	Occult.	Reapp.		4	0	12	
III.	Eclipse	Disapp.		4	2	26	8.0
III.	Eclipse	Reapp.		4	4	21	49.2
II.	Transit	Ingress	W.	4	10	55	
II.	Shadow	Ingress		4	13	4	
II.	Transit	Egress		4	13	15	
II.	Shadow	Egress		4	15	26	
I.	Occult.	Disapp.		4	17	14	
I.	Eclipse	Reapp.		4	20	26	55.3
I.	Transit	Ingress		5	14	23	
I.	Shadow	Ingress		5	15	26	
I.	Transit	Egress		5	16	35	
I.	Shadow	Egress		5	17	39	
II.	Occult.	Disapp.		6	5	11	
II.	Eclipse	Reapp.	W.	6	9	40	27.8
I.	Occult.	Disapp.	W.	6	11	41	
I.	Eclipse	Reapp.		6	14	55	33.6
I.	Transit	Ingress	W.	7	8	51	
I.	Shadow	Ingress	W.	7	9	56	
I.	Transit	Egress	W.	7	11	3	
III.	Transit	Ingress	W.	7	11	47	
I.	Shadow	Egress	W.	7	12	8	
III.	Transit	Egress		7	13	58	
III.	Shadow	Ingress		7	16	13	
III.	Shadow	Egress		7	18	23	
II.	Transit	Ingress		8	0	7	
II.	Shadow	Ingress		8	2	21	
II.	Transit	Egress		8	2	27	
II.	Shadow	Egress		8	4	43	
I.	Occult.	Disapp.		8	6	8	
I.	Eclipse	Reapp.	W.	8	9	24	15.8
I.	Transit	Ingress		9	3	18	
I.	Shadow	Ingress		9	4	24	
I.	Transit	Egress		9	5	30	
I.	Shadow	Egress		9	6	36	
II.	Occult.	Disapp.		9	18	24	
II.	Eclipse	Reapp.		9	22	59	29.5
I.	Occult.	Disapp.		10	0	35	
I.	Eclipse	Reapp.		10	3	52	54.9
I.	Transit	Ingress		10	21	46	
I.	Shadow	Ingress		10	22	53	
I.	Transit	Egress		10	23	58	
I.	Shadow	Egress		11	1	5	

WASHINGTON MEAN TIME.

JULY.

				d	h	m	s
III.	Occult.	Disapp.		11	1	44	
III.	Occult.	Reapp.		11	3	54	
III.	Eclipse	Disapp.		11	6	25	38.5
III.	Eclipse	Reapp.	W.	11	8	21	42.9
II.	Transit	Ingress		11	13	19	
II.	Shadow	Ingress		11	15	39	
II.	Transit	Egress		11	15	40	
II.	Shadow	Egress		11	18	1	
I.	Occult.	Disapp.		11	19	2	
I.	Eclipse	Reapp.		11	22	21	34.9
I.	Transit	Ingress		12	16	14	
I.	Shadow	Ingress		12	17	22	
I.	Transit	Egress		12	18	26	
I.	Shadow	Egress		12	19	34	
II.	Occult.	Disapp.		13	7	38	
II.	Occult.	Reapp.	W.	13	10	0	
II.	Eclipse	Disapp.	W.	13	10	1	36.6
II.	Eclipse	Reapp.		13	12	17	37.4
I.	Occult.	Disapp.		13	13	30	
I.	Eclipse	Reapp.		13	16	50	14.0
I.	Transit	Ingress	W.	14	10	42	
I.	Shadow	Ingress	W.	14	11	51	
I.	Transit	Egress		14	12	54	
I.	Shadow	Egress		14	14	3	
III.	Transit	Ingress		14	15	27	
III.	Transit	Egress		14	17	40	
III.	Shadow	Ingress		14	20	12	
III.	Shadow	Egress		14	22	22	
II.	Transit	Ingress		15	2	32	
II	Transit	Egress		15	4	54	
II.	Shadow	Ingress		15	4	56	
II.	Shadow	Egress		15	7	18	
I.	Occult.	Disapp.	W.	15	7	58	
I.	Eclipse	Reapp.	W.	15	11	18	56.5
I.	Transit	Ingress		16	5	10	
I.	Shadow	Ingress		16	6	20	
I.	Transit	Egress		16	7	22	
I.	Shadow	Egress	W.	16	8	33	
II.	Occult.	Disapp.		16	20	52	
II.	Occult.	Reapp.		16	23	14	
II.	Eclipse	Disapp.		16	23	20	40.4
II.	Eclipse	Reapp.		17	1	36	45.4
I.	Occult.	Disapp.		17	2	26	
I.	Eclipse	Reapp.		17	5	47	36.5
I.	Transit	Ingress		17	23	38	
I.	Shadow	Ingress		18	0	48	
I.	Transit	Egress		18	1	50	
I.	Shadow	Egress		18	3	1	
III.	Occult.	Disapp.		18	5	25	
III.	Occult.	Reapp.		18	7	40	
III.	Eclipse	Disapp.	W.	18	10	24	33.7
III.	Eclipse	Reapp.		18	12	21	2.5
II.	Transit	Ingress		18	15	46	
II.	Transit	Egress		18	18	8	
II.	Shadow	Ingress		18	18	13	
II.	Shadow	Egress		18	20	35	
I.	Occult.	Disapp.		18	20	54	
I.	Eclipse	Reapp.		19	0	16	17.0
I.	Transit	Ingress		19	18	6	
I.	Shadow	Ingress		19	19	17	
I.	Transit	Egress		19	20	18	
I.	Shadow	Egress		19	21	30	
II.	Occult.	Disapp.	W.	20	10	7	
II.	Occult.	Reapp.		20	12	30	
II.	Eclipse	Disapp.		20	12	38	46.8
II.	Eclipse	Reapp		20	14	54	56 0
I.	Occult.	Disapp.		20	15	22	
I.	Eclipse	Reapp.		20	18	44	56.7
I.	Transit	Ingress		21	12	34	
I.	Shadow	Ingress		21	13	46	
I.	Transit	Egress		21	14	46	
I.	Shadow	Egress		21	15	59	
III.	Transit	Ingress		21	19	12	
III.	Transit	Egress		21	21	28	
III.	Shadow	Ingress		22	0	12	
III.	Shadow	Egress		22	2	22	
II.	Transit	Ingress		22	5	0	
II.	Transit	Egress		22	7	22	
II.	Shadow	Ingress		22	7	31	
I.	Occult.	Disapp.	W.	22	9	50	
II.	Shadow	Egress	W.	22	9	53	
I.	Eclipse	Reapp.		22	13	13	39.1
I.	Transit	Ingress		23	7	2	
I.	Shadow	Ingress	W.	23	8	15	
I.	Transit	Egress	W.	23	9	14	
I.	Shadow	Egress	W.	23	10	28	
II.	Occult.	Disapp.		23	23	23	
II.	Occult.	Reapp.		24	1	46	
II.	Eclipse	Disapp.		24	1	57	56.2
II.	Eclipse	Reapp.		24	4	14	9.6
I.	Occult.	Disapp.		24	4	18	
I.	Eclipse	Reapp.		24	7	42	19 7
I.	Transit	Ingress		25	1	30	
I.	Shadow	Ingress		25	2	44	
I.	Transit	Egress		25	3	42	
I.	Shadow	Egress		25	4	57	
III.	Occult.	Disapp.	W.	25	9	12	
III.	Occult.	Reapp.		25	11	30	

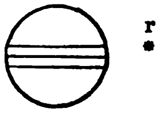
WASHINGTON MEAN TIME.

JULY.

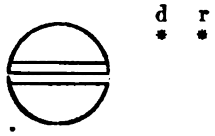
			d	h	m	s				d	h	m	s
III.	Eclipse	Disapp.	25	14	23	29.0	I.	Shadow	Egress	28	17	54	
III.	Eclipse	Reapp.	25	16	20	23.6	III.	Transit	Ingress	28	23	2	
II.	Transit	Ingress	25	18	15		III.	Transit	Egress	29	1	20	
II.	Transit	Egress	25	20	37		III.	Shadow	Ingress	29	4	11	
II.	Shadow	Ingress	25	20	48		III.	Shadow	Egress	29	6	22	
I.	Occult.	Disapp.	25	22	46		II.	Transit	Ingress	29	7	30	
II.	Shadow	Egress	25	23	10		II.	Transit	Egress W.	29	9	52	
I.	Eclipse	Reapp.	26	2	11	0.6	II.	Shadow	Ingress W.	29	10	6	
I.	Transit	Ingress	26	19	58		I.	Occult.	Disapp.	29	11	42	
I.	Shadow	Ingress	26	21	12		II.	Shadow	Egress	29	12	28	
I.	Transit	Egress	26	22	10		I.	Eclipse	Reapp.	29	15	8	23.4
I.	Shadow	Egress	26	23	25		I.	Transit	Ingress W.	30	8	54	
II.	Occult.	Disapp.	27	12	40		I.	Shadow	Ingress W.	30	10	10	
II.	Occult.	Reapp.	27	15	2		I.	Transit	Egress	30	11	6	
II.	Eclipse	Disapp.	27	15	16	5.1	I.	Shadow	Egress	30	12	23	
I.	Occult.	Disapp.	27	17	14		II.	Occult.	Disapp.	31	1	56	
II.	Eclipse	Reapp.	27	17	32	23.1	II.	Occult.	Reapp.	31	4	19	
I.	Eclipse	Reapp.	27	20	39	40.6	II.	Eclipse	Disapp.	31	4	35	18.5
I.	Transit	Ingress	28	14	26		I.	Occult.	Disapp.	31	6	10	
I.	Shadow	Ingress	28	15	41		II.	Eclipse	Reapp.	31	6	51	41.3
I.	Transit	Egress	28	16	38		I.	Eclipse	Reapp. W.	31	9	37	4.5

Phases of the Eclipses of the Satellites for an Inverting Telescope.

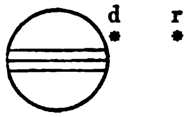
I.



III.



II.



IV. *Not Eclipsed.*

AUGUST.

			d	h	m	s				d	h	m	s
I.	Transit	Ingress	1	3	22		II.	Transit	Ingress	1	20	46	
I.	Shadow	Ingress	1	4	39		II.	Transit	Egress	1	23	8	
I.	Transit	Egress	1	5	34		II.	Shadow	Ingress	1	23	23	
I.	Shadow	Egress	1	6	52		I.	Occult.	Disapp.	2	0	38	
III.	Occult.	Disapp.	1	13	3		II.	Shadow	Egress	2	1	45	
III.	Occult.	Reapp.	1	15	22		I.	Eclipse	Reapp.	2	4	5	45.1
III.	Eclipse	Disapp.	1	18	22	6.9	I.	Transit	Ingress	2	21	50	
III.	Eclipse	Reapp.	1	20	19	28.7	I.	Shadow	Ingress	2	23	7	

WASHINGTON MEAN TIME.

AUGUST.

				d	h	m	s					d	h	m	s
I.	Transit	Egress		3	0	2		I.	Shadow	Egress		10	3	16	
I.	Shadow	Egress		3	1	20		II.	Occult.	Disapp.		10	17	50	
II.	Occult.	Disapp.		3	15	14		II.	Occult.	Reapp.		10	20	14	
II.	Occult.	Reapp.		3	17	37		II.	Eclipse	Disapp.		10	20	30	57.0
II.	Eclipse	Disapp.		3	17	53	28.9	I.	Occult.	Disapp.		10	21	2	
I.	Occult.	Disapp.		3	19	6		II.	Eclipse	Reapp.		10	22	47	34.4
II.	Eclipse	Reapp.		3	20	9	56.5	I.	Eclipse	Reapp.		11	0	29	10.4
I.	Eclipse	Reapp.		3	22	34	25.3	I.	Transit	Ingress		11	18	15	
I.	Transit	Ingress		4	16	19		I.	Shadow	Ingress		11	19	32	
I.	Shadow	Ingress		4	17	36		I.	Transit	Egress		11	20	28	
I.	Transit	Egress		4	18	32		I.	Shadow	Egress		11	21	45	
I.	Shadow	Egress		4	19	49		III.	Transit	Ingress		12	6	54	
III.	Transit	Ingress		5	2	56		III.	Transit	Egress	W.	12	9	16	
III.	Transit	Egress		5	5	16		III.	Shadow	Ingress		12	12	10	
III.	Shadow	Ingress	W.	5	8	11		II.	Transit	Ingress		12	12	36	
II.	Transit	Ingress	W.	5	10	2		III.	Shadow	Egress		12	14	22	
III.	Shadow	Egress	W.	5	10	22		II.	Transit	Egress		12	14	59	
II.	Transit	Egress		5	12	25		II.	Shadow	Ingress		12	15	15	
II.	Shadow	Ingress		5	12	40		I.	Occult.	Disapp.		12	15	31	
I.	Occult.	Disapp.		5	13	35		II.	Shadow	Egress		12	17	37	
II.	Shadow	Egress		5	15	2		I.	Eclipse	Reapp.		12	18	57	53.2
I.	Eclipse	Reapp.		5	17	3	8.0	I.	Transit	Ingress		13	12	44	
I.	Transit	Ingress		6	10	48		I.	Shadow	Ingress		13	14	0	
I.	Shadow	Ingress		6	12	5		I.	Transit	Egress		13	14	57	
I.	Transit	Egress		6	13	1		I.	Shadow	Egress		13	16	13	
I.	Shadow	Egress		6	14	18		II.	Occult.	Disapp.		14	7	9	
II.	Occult.	Disapp.		7	4	30		II.	Occult.	Reapp.	W.	14	9	33	
II.	Occult.	Reapp.		7	6	54		II.	Eclipse	Disapp.	W.	14	9	50	15.2
II.	Eclipse	Disapp.		7	7	12	45.4	I.	Occult.	Disapp.		14	10	0	
I.	Occult.	Disapp.	W.	7	8	4		II.	Eclipse	Reapp.		14	12	6	57.6
II.	Eclipse	Reapp.	W.	7	9	29	17.8	I.	Eclipse	Reapp.		14	13	26	34.5
I.	Eclipse	Reapp.		7	11	31	49.2	I.	Transit	Ingress		15	7	13	
I.	Transit	Ingress		8	5	17		I.	Shadow	Ingress	W.	15	8	29	
I.	Shadow	Ingress		8	6	34		I.	Transit	Egress	W.	15	9	26	
I.	Transit	Egress	W.	8	7	30		I.	Shadow	Egress		15	10	42	
I.	Shadow	Egress	W.	8	8	47		III.	Occult.	Disapp.		15	20	58	
III.	Occult.	Disapp.		8	16	59		III.	Occult.	Reapp.		15	23	20	
III.	Occult.	Reapp.		8	19	20		II.	Transit	Ingress		16	1	54	
III.	Eclipse	Disapp.		8	22	20	47.8	III.	Eclipse	Disapp.		16	2	19	55.2
II.	Transit	Ingress		8	23	19		II.	Transit	Egress		16	4	17	
III.	Eclipse	Reapp.		9	0	18	38.2	III.	Eclipse	Reapp.		16	4	18	15.6
II.	Transit	Egress		9	1	42		I.	Occult.	Disapp.		16	4	29	
II.	Shadow	Ingress		9	1	58		II.	Shadow	Ingress		16	4	33	
I.	Occult.	Disapp.		9	2	33		II.	Shadow	Egress		16	6	55	
II.	Shadow	Egress		9	4	20		I.	Eclipse	Reapp.	W.	16	7	55	15.3
I.	Eclipse	Reapp.		9	6	0	30.1	I.	Transit	Ingress		17	1	42	
I.	Transit	Ingress		9	23	46		I.	Shadow	Ingress		17	2	58	
I.	Shadow	Ingress		10	1	3		I.	Transit	Egress		17	3	55	
I.	Transit	Egress		10	1	59		I.	Shadow	Egress		17	5	11	

WASHINGTON MEAN TIME.

AUGUST.

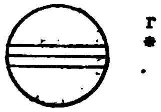
			d	h	m	s				d	h	m	s
II.	Occult.	Disapp.	17	20	28		II.	Occult.	Disapp.	24	23	10	
II.	Occult.	Reapp.	17	22	53		I.	Occult.	Disapp.	25	0	54	
I.	Occult.	Disapp.	17	22	58		II.	Occult.	Reapp.	25	1	35	
II.	Eclipse	Disapp.	17	23	8	27.4	II.	Eclipse	Disapp.	25	1	45	59.5
II.	Eclipse	Reapp.	18	1	25	14.8	II.	Eclipse	Reapp.	25	4	2	56.9
I.	Eclipse	Reapp.	18	2	23	55.4	I.	Eclipse	Reapp.	25	4	18	39.1
I.	Transit	Ingress	18	20	11		I.	Transit	Ingress	25	22	8	
I.	Shadow	Ingress	18	21	27		I.	Shadow	Ingress	25	23	22	
I.	Transit	Egress	18	22	24		I.	Transit	Egress	26	0	21	
I.	Shadow	Egress	18	23	40		I.	Shadow	Egress	26	1	35	
III.	Transit	Ingress	19	10	56		III.	Transit	Ingress	26	15	2	
III.	Transit	Egress	19	13	20		III.	Transit	Egress	26	17	26	
II.	Transit	Ingress	19	15	12		II.	Transit	Ingress	26	17	50	
III.	Shadow	Ingress	19	16	10		I.	Occult.	Disapp.	26	19	23	
I.	Occult.	Disapp.	19	17	27		III.	Shadow	Ingress	26	20	9	
II.	Transit	Egress	19	17	36		II.	Transit	Egress	26	20	14	
II.	Shadow	Ingress	19	17	50		II.	Shadow	Ingress	26	20	24	
III.	Shadow	Egress	19	18	22		III.	Shadow	Egress	26	22	21	
II.	Shadow	Egress	19	20	12		II.	Shadow	Egress	26	22	46	
I.	Eclipse	Reapp.	19	20	52	37.5	I.	Eclipse	Reapp.	26	22	47	20.8
I.	Transit	Ingress	20	14	40		I.	Transit	Ingress	27	16	37	
I.	Shadow	Ingress	20	15	56		I.	Shadow	Ingress	27	17	51	
I.	Transit	Egress	20	16	53		I.	Transit	Egress	27	18	50	
I.	Shadow	Egress	20	18	9		I.	Shadow	Egress	27	20	4	
II.	Occult.	Disapp.	21	9	48		II.	Occult.	Disapp.	28	12	30	
I.	Occult.	Disapp.	21	11	56		I.	Occult.	Disapp.	28	13	52	
II.	Occult.	Reapp.	21	12	13		II.	Occult.	Reapp	28	14	55	
II.	Eclipse	Disapp.	21	12	27	47.1	II.	Eclipse	Disapp.	28	15	5	19.2
II.	Eclipse	Reapp.	21	14	44	39.5	I.	Eclipse	Reapp.	28	17	16	2.2
I.	Eclipse	Reapp.	21	15	21	18.9	II.	Eclipse	Reapp.	28	17	22	21.6
I.	Transit	Ingress W.	22	9	10		I.	Transit	Ingress	29	11	7	
I.	Shadow	Ingress	22	10	25		I.	Shadow	Ingress	29	12	20	
I.	Transit	Egress	22	11	23		I.	Transit	Egress	29	13	20	
I.	Shadow	Egress	22	12	38		I.	Shadow	Egress	29	14	33	
III.	Occult.	Disapp.	23	1	1		III.	Occult.	Disapp.	30	5	9	
III.	Occult.	Reapp.	23	3	25		II.	Transit	Ingress W.	30	7	10	
II.	Transit	Ingress	23	4	31		III.	Occult.	Reapp. W.	30	7	33	
III.	Eclipse	Disapp.	23	6	18	57.4	I.	Occult.	Disapp. W.	30	8	21	
I.	Occult.	Disapp.	23	6	25		II.	Transit	Egress	30	9	34	
II.	Transit	Egress	23	6	55		II.	Shadow	Ingress	30	9	42	
II.	Shadow	Ingress	23	7	7		III.	Eclipse	Disapp.	30	10	18	28.5
III.	Eclipse	Reapp. W.	23	8	17	49.0	I.	Eclipse	Reapp.	30	11	44	42.3
II.	Shadow	Egress	23	9	29		II.	Shadow	Egress	30	12	4	
I.	Eclipse	Reapp.	23	9	49	58.7	III.	Eclipse	Reapp.	30	12	17	52.5
I.	Transit	Ingress	24	3	39		I.	Transit	Ingress	31	5	36	
I.	Shadow	Ingress	24	4	53		I.	Shadow	Ingress	31	6	49	
I.	Transit	Egress	24	5	52		I.	Transit	Egress W.	31	7	49	
I.	Shadow	Egress	24	7	6		I.	Shadow	Egress	31	9	2	

WASHINGTON MEAN TIME.

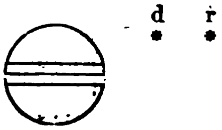
AUGUST.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

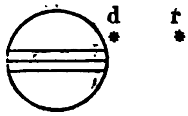
I.



III.



II.



IV. *Not Eclipsed.*

SEPTEMBER.

			d	h	m	s				d	h	m	s
II.	Occult.	Disapp.	1	1	51		I.	Transit	Ingress	5	13	4	
I.	Occult.	Disapp.	1	2	50		I.	Shadow	Ingress	5	14	15	
II.	Occult.	Reapp.	1	4	16		I.	Transit	Egress	5	15	17	
II.	Eclipse	Disapp.	1	4	23	31.1	I.	Shadow	Egress	5	16	28	
I.	Eclipse	Reapp.	1	6	13	22.2	III.	Occult.	Disapp.	6	9	20	
II.	Eclipse	Reapp.	1	6	40	38.5	II.	Transit	Ingress	6	9	50	
I.	Transit	Ingress	2	0	5		I.	Occult.	Disapp.	6	10	19	
I.	Shadow	Ingress	2	1	18		III.	Occult.	Reapp.	6	11	45	
I.	Transit	Egress	2	2	18		II.	Transit	Egress	6	12	14	
I.	Shadow	Egress	2	3	31		II.	Shadow	Ingress	6	12	16	
III.	Transit	Ingress	2	19	11		I.	Eclipse	Reapp.	6	13	39	24 9
II.	Transit	Ingress	2	20	30		III.	Eclipse	Disapp.	6	14	17	22 8
I.	Occult.	Disapp.	2	21	19		II.	Shadow	Egress	6	14	38	
III.	Transit	Egress	2	21	36		III.	Eclipse	Reapp.	6	16	17	20.2
II.	Transit	Egress	2	22	54		I.	Transit	Ingress W.	7	7	34	
II.	Shadow	Ingress	2	22	59		I.	Shadow	Ingress	7	8	44	
III.	Shadow	Ingress	3	0	8		I.	Transit	Egress	7	9	47	
I.	Eclipse	Reapp.	3	0	42	3.8	I.	Shadow	Egress	7	10	57	
II.	Shadow	Egress	3	1	21		II.	Occult.	Disapp.	8	4	36	
III.	Shadow	Egress	3	2	21		I.	Occult.	Disapp.	8	4	46	
I.	Transit	Ingress	3	18	35		II.	Occult.	Reapp W.	8	7	0	
I.	Shadow	Ingress	3	19	46		II.	Eclipse	Disapp. W.	8	7	1	1.3
I.	Transit	Egress	3	20	48		I.	Eclipse	Reapp. W.	8	8	8	4.7
I.	Shadow	Egress	3	21	59		II.	Eclipse	Reapp.	8	9	18	18.9
II.	Occult.	Disapp.	4	15	14		I.	Transit	Ingress	9	2	3	
I.	Occult.	Disapp.	4	15	48		I.	Shadow	Ingress	9	3	13	
II.	Occult.	Reapp.	4	17	39		I.	Transit	Egress	9	4	16	
II.	Eclipse	Disapp.	4	17	42	50.1	I.	Shadow	Egress	9	5	26	
I.	Eclipse	Reapp.	4	19	10	45.2	II.	Transit	Ingress	9	23	10	
II.	Eclipse	Reapp.	4	20	0	2 5	I.	Occult.	Disapp.	9	23	18	

WASHINGTON MEAN TIME.

SEPTEMBER.

				d	h	m	s					d	h	m	s
III.	Transit	Ingress		9	23	23		II.	Shadow	Egress		17	6	30	
II.	Shadow	Ingress		10	1	33		III.	Shadow	Ingress		17	8	7	
II.	Transit	Egress		10	1	35		III.	Shadow	Egress		17	10	21	
III.	Transit	Egress		10	1	50		I.	Transit	Ingress		17	22	33	
I.	Eclipse	Reapp.		10	2	36	45.4	I.	Shadow	Ingress		17	23	37	
II.	Shadow	Egress		10	3	55		I.	Transit	Egress		18	0	46	
III.	Shadow	Ingress		10	4	8		I.	Shadow	Egress		18	1	50	
III.	Shadow	Egress		10	6	21		I.	Occult.	Disapp.		18	19	46	
I.	Transit	Ingress		10	20	33		II.	Occult.	Disapp.		18	20	43	
I.	Shadow	Ingress		10	21	42		I.	Eclipse	Reapp.		18	23	0	5.5
I.	Transit	Egress		10	22	46		II.	Eclipse	Reapp.		19	1	15	15.1
I.	Shadow	Egress		10	23	55		I.	Transit	Ingress		19	17	3	
I.	Occult.	Disapp.		11	17	46		I.	Shadow	Ingress		19	18	6	
II.	Occult.	Disapp.		11	17	57		I.	Transit	Egress		19	19	16	
I.	Eclipse	Reapp.		11	21	5	26.6	I.	Shadow	Egress		19	20	19	
II.	Eclipse	Reapp.		11	22	37	41.0	I.	Occult.	Disapp.		20	14	15	
I.	Transit	Ingress		12	15	3		II.	Transit	Ingress		20	15	15	
I.	Shadow	Ingress		12	16	11		II.	Shadow	Ingress		20	17	25	
I.	Transit	Egress		12	17	16		I.	Eclipse	Reapp.		20	17	28	43.9
I.	Shadow	Egress		12	18	24		II.	Transit	Egress		20	17	40	
I.	Occult.	Disapp.		13	12	16		III.	Occult.	Disapp.		20	17	48	
II.	Transit	Ingress		13	12	31		II.	Shadow	Egress		20	19	48	
III.	Occult.	Disapp.		13	13	33		III.	Occult.	Reapp.		20	20	15	
II.	Shadow	Ingress		13	14	50		III.	Eclipse	Disapp.		20	22	14	42.5
II.	Transit	Egress		13	14	56		III.	Eclipse	Reapp.		21	0	15	49.9
I.	Eclipse	Reapp.		13	15	34	5.4	I.	Transit	Ingress		21	11	33	
III.	Occult.	Reapp.		13	16	0		I.	Shadow	Ingress		21	12	35	
II.	Shadow	Egress		13	17	12		I.	Transit	Egress		21	13	46	
III.	Eclipse	Disapp.		13	18	16	12.3	I.	Shadow	Egress		21	14	48	
III.	Eclipse	Reapp.		13	20	16	44.1	I.	Occult.	Disapp.		22	8	45	
I.	Transit	Ingress		14	9	33		II.	Occult.	Disapp.		22	10	7	
I.	Shadow	Ingress		14	10	40		I.	Eclipse	Reapp.		22	11	57	22.7
I.	Transit	Egress		14	11	46		II.	Eclipse	Reapp.		22	14	33	28.1
I.	Shadow	Egress		14	12	53		I.	Transit	Ingress		23	6	3	
I.	Occult.	Disapp.		15	6	46		I.	Shadow	Ingress	W.	23	7	4	
II.	Occult.	Disapp.	W.	15	7	20		I.	Transit	Egress		23	8	16	
I.	Eclipse	Reapp.		15	10	2	44.7	I.	Shadow	Egress		23	9	17	
II.	Eclipse	Reapp.		15	11	55	55.7	I.	Occult.	Disapp.		24	3	15	
I.	Transit	Ingress		16	4	3		II.	Transit	Ingress		24	4	37	
I.	Shadow	Ingress		16	5	9		I.	Eclipse	Reapp.		24	6	26	2.0
I.	Transit	Egress		16	6	16		II.	Shadow	Ingress		24	6	42	
I.	Shadow	Egress	W.	16	7	22		II.	Transit	Egress	W.	24	7	2	
I.	Occult.	Disapp.		17	1	16		III.	Transit	Ingress		24	7	57	
II.	Transit	Ingress		17	1	53		II.	Shadow	Egress		24	9	5	
III.	Transit	Ingress		17	3	40		III.	Transit	Egress		24	10	24	
II.	Shadow	Ingress		17	4	8		III.	Shadow	Ingress		24	12	7	
II.	Transit	Egress		17	4	18		III.	Shadow	Egress		24	14	22	
I.	Eclipse	Reapp.		17	4	31	24.6	I.	Transit	Ingress		25	0	33	
III.	Transit	Egress		17	6	5		I.	Shadow	Ingress		25	1	32	

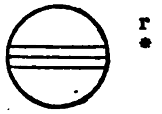
WASHINGTON MEAN TIME.

SEPTEMBER.

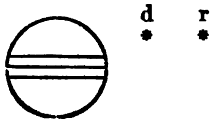
			d	h	m	s				d	h	m	s
I.	Transit	Egress	25	2	46		II.	Shadow	Egress	27	22	22	
I.	Shadow	Egress	25	3	45		III.	Occult.	Reapp.	28	0	34	
I.	Occult.	Disapp.	25	21	45		III.	Eclipse	Disapp.	28	2	13	12.8
II.	Occult.	Disapp.	25	23	30		III.	Eclipse	Reapp.	28	4	14	57.2
I.	Eclipse	Reapp.	26	0	54	42.6	I.	Transit	Ingress	28	13	33	
II.	Eclipse	Reapp.	26	3	52	44.3	I.	Shadow	Ingress	28	14	30	
I.	Transit	Ingress	26	19	3		I.	Transit	Egress	28	15	46	
I.	Shadow	Ingress	26	20	1		I.	Shadow	Egress	28	16	43	
I.	Transit	Egress	26	21	16		I.	Occult.	Disapp.	29	10	45	
I.	Shadow	Egress	26	22	14		II.	Occult.	Disapp.	29	12	54	
I.	Occult.	Disapp.	27	16	15		I.	Eclipse	Reapp.	29	13	51	59.0
II.	Transit	Ingress	27	17	59		II.	Eclipse	Reapp.	29	17	10	55.0
I.	Eclipse	Reapp.	27	19	23	20.5	I.	Transit	Ingress	30	8	3	
II.	Shadow	Ingress	27	19	59		I.	Shadow	Ingress	30	8	59	
II.	Transit	Egress	27	20	24		I.	Transit	Egress	30	10	16	
III.	Occult.	Disapp.	27	22	7		I.	Shadow	Egress	30	11	12	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

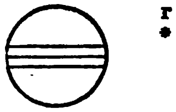
I.



III.



II.



IV. *Not Eclipsed.*

OCTOBER.

			d	h	m	s				d	h	m	s
I.	Occult.	Disapp.	1	5	15		I.	Shadow	Egress	2	5	41	
II.	Transit	Ingress	1	7	22		I.	Occult.	Disapp.	2	23	45	
I.	Eclipse	Reapp.	1	8	20	37.2	II.	Occult.	Disapp.	3	2	18	
II.	Shadow	Ingress	1	9	16		I.	Eclipse	Reapp.	3	2	49	17.3
II.	Transit	Egress	1	9	47		II.	Eclipse	Reapp.	3	6	30	6.9
II.	Shadow	Egress	1	11	39		I.	Transit	Ingress	3	21	3	
III.	Transit	Ingress	1	12	17		I.	Shadow	Ingress	2	21	57	
III.	Transit	Egress	1	14	44		I.	Transit	Egress	3	23	17	
III.	Shadow	Ingress	1	16	7		I.	Shadow	Egress	4	0	10	
III.	Shadow	Egress	1	18	22		I.	Occult.	Disapp.	4	18	15	
I.	Transit	Ingress	2	2	33		II.	Transit	Ingress	4	20	45	
I.	Shadow	Ingress	2	3	28		I.	Eclipse	Reapp.	4	21	17	54.4
I.	Transit	Egress	2	4	47		II.	Shadow	Ingress	4	22	34	

WASHINGTON MEAN TIME.

OCTOBER.

			d	h	m	s
II.	Transit	Egress	4	23	10	
II.	Shadow	Egress	5	0	57	
III.	Occult.	Disapp.	5	2	27	
III.	Occult.	Reapp.	5	4	54	
III.	Eclipse	Disapp.	5	6	12	8.3
III.	Eclipse	Reapp.	5	8	14	30.9
I.	Transit	Ingress	5	15	33	
I.	Shadow	Ingress	5	16	25	
I.	Transit	Egress	5	17	47	
I.	Shadow	Egress	5	18	38	
I.	Occult.	Disapp.	6	12	45	
II.	Occult.	Disapp.	6	15	42	
I.	Eclipse	Reapp.	6	15	46	33.3
II.	Eclipse	Reapp.	6	19	48	14.8
I.	Transit	Ingress	7	10	3	
I.	Shadow	Ingress	7	10	54	
I.	Transit	Egress	7	12	17	
I.	Shadow	Egress	7	13	7	
I.	Occult.	Disapp.	8	7	15	
II.	Transit	Ingress	8	10	8	
I.	Eclipse	Reapp.	8	10	15	9.7
II.	Shadow	Ingress	8	11	51	
II.	Transit	Egress	8	12	34	
II.	Shadow	Egress	8	14	14	
III.	Transit	Ingress	8	16	39	
III.	Transit	Egress	8	19	7	
III.	Shadow	Ingress	8	20	6	
III.	Shadow	Egress	8	22	22	
I.	Transit	Ingress	9	4	33	
I.	Shadow	Ingress	9	5	23	
I.	Transit	Egress	9	6	47	
I.	Shadow	Egress	9	7	36	
I.	Occult.	Disapp.	10	1	45	
I.	Eclipse	Reapp.	10	4	43	49.6
II.	Occult.	Disapp.	10	5	6	
II.	Eclipse	Reapp.	10	9	7	21.1
I.	Transit	Ingress	10	23	3	
I.	Shadow	Ingress	10	23	51	
I.	Transit	Egress	11	1	17	
I.	Shadow	Egress	11	2	4	
I.	Occult.	Disapp.	11	20	15	
I.	Eclipse	Reapp.	11	23	12	25.5
II.	Transit	Ingress	11	23	31	
II.	Shadow	Ingress	12	1	8	
II.	Transit	Egress	12	1	57	
II.	Shadow	Egress	12	3	31	
III.	Occult.	Disapp.	12	6	49	
III.	Occult.	Reapp.	12	9	18	
III.	Eclipse	Disapp.	12	10	10	52.7
III.	Eclipse	Reapp.	12	12	13	54.9
I.	Transit	Ingress	12	17	33	
I.	Shadow	Ingress	12	18	20	
I.	Transit	Egress	12	19	47	
I.	Shadow	Egress	12	20	33	
I.	Occult.	Disapp.	13	14	46	
I.	Eclipse	Reapp.	13	17	41	3.0
II.	Occult.	Disapp.	13	18	31	
II.	Eclipse	Reapp.	13	22	25	25.9
I.	Transit	Ingress	14	12	3	
I.	Shadow	Ingress	14	12	49	
I.	Transit	Egress	14	14	17	
I.	Shadow	Egress	14	15	2	
I.	Occult.	Disapp.	15	9	16	
I.	Eclipse	Reapp.	15	12	9	39.7
II.	Transit	Ingress	15	12	54	
II.	Shadow	Ingress	15	14	25	
II.	Transit	Egress	15	15	20	
II.	Shadow	Egress	15	16	48	
III.	Transit	Ingress	15	21	3	
III.	Transit	Egress	15	23	31	
III.	Shadow	Ingress	16	0	5	
III.	Shadow	Egress	16	2	21	
I.	Transit	Ingress	16	6	33	
I.	Shadow	Ingress	16	7	17	
I.	Transit	Egress	16	8	47	
I.	Shadow	Egress	16	9	30	
I.	Occult.	Disapp.	17	3	46	
I.	Eclipse	Reapp.	17	6	38	18.9
II.	Occult.	Disapp.	17	7	56	
II.	Eclipse	Reapp.	17	11	44	26.4
I.	Transit	Ingress	18	1	3	
I.	Shadow	Ingress	18	1	46	
I.	Transit	Egress	18	3	17	
I.	Shadow	Egress	18	3	59	
I.	Occult.	Disapp.	18	22	16	
I.	Eclipse	Reapp.	19	1	6	54.2
II.	Transit	Ingress	19	2	18	
II.	Shadow	Ingress	19	3	42	
II.	Transit	Egress	19	4	44	
II.	Shadow	Egress	19	6	5	
III.	Occult.	Disapp.	19	11	15	
III.	Occult.	Reapp.	19	13	42	
III.	Eclipse	Disapp.	19	14	10	6.5
III.	Eclipse	Reapp.	19	16	13	49.5
I.	Transit	Ingress	19	19	34	
I.	Shadow	Ingress	19	20	15	
I.	Transit	Egress	19	21	48	
I.	Shadow	Egress	19	22	28	

WASHINGTON MEAN TIME.

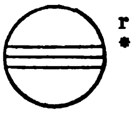
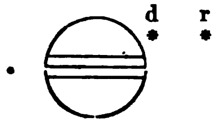
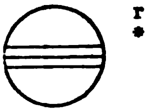
OCTOBER.

			d	h	m	s				d	h	m	s
I.	Occult.	Disapp.	20	16	46		II.	Shadow	Egress	26	8	41	
I.	Eclipse	Reapp.	20	19	35	31.0	III.	Occult.	Disapp.	26	15	40	
II.	Occult.	Disapp.	20	21	21		III.	Occult.	Reapp.	26	18	8	
II.	Eclipse	Reapp.	21	1	2	28.0	III.	Eclipse	Disapp.	26	18	8	38.6
I.	Transit	Ingress	21	14	5		III.	Eclipse	Reapp.	26	20	13	3.8
I.	Shadow	Ingress	21	14	44		I.	Transit	Ingress	26	21	36	
I.	Transit	Egress	21	16	19		I.	Shadow	Ingress	26	22	10	
I.	Shadow	Egress	21	16	57		I.	Transit	Egress	26	23	50	
I.	Occult.	Disapp.	22	11	16		I.	Shadow	Egress	27	0	23	
I.	Eclipse	Reapp.	22	14	4	6.4	I.	Occult.	Disapp.	27	18	47	
II.	Transit	Ingress	22	15	42		I.	Eclipse	Reapp.	27	21	29	55.6
II.	Shadow	Ingress	22	17	0		II.	Occult.	Disapp.	28	0	11	
II.	Transit	Egress	22	18	8		II.	Eclipse	Reapp.	28	3	39	19.0
II.	Shadow	Egress	22	19	23		I.	Transit	Ingress	28	16	7	
III.	Transit	Ingress	23	1	28		I.	Shadow	Ingress	28	16	39	
III.	Transit	Egress	23	3	55		I.	Transit	Egress	28	18	21	
III.	Shadow	Ingress	23	4	4		I.	Shadow	Egress	28	18	52	
III.	Shadow	Egress	23	6	20		I.	Occult.	Disapp.	29	13	17	
I.	Transit	Ingress	23	8	35		I.	Eclipse	Reapp.	29	15	58	30.4
I.	Shadow	Ingress	23	9	12		II.	Transit	Ingress	29	18	30	
I.	Transit	Egress	23	10	49		II.	Shadow	Ingress	29	19	34	
I.	Shadow	Egress	23	11	25		II.	Transit	Egress	29	20	56	
I.	Occult.	Disapp.	24	5	46		II.	Shadow	Egress	29	21	58	
I.	Eclipse	Reapp.	24	8	32	45.0	III.	Transit	Ingress	30	5	55	
II.	Occult.	Disapp.	24	10	46		III.	Shadow	Ingress	30	8	3	
II.	Eclipse	Reapp.	24	14	21	21.4	III.	Transit	Egress	30	8	22	
I.	Transit	Ingress	25	3	6		III.	Shadow	Egress	30	10	20	
I.	Shadow	Ingress	25	3	41		I.	Transit	Ingress	30	10	37	
I.	Transit	Egress	25	5	20		I.	Shadow	Ingress	30	11	8	
I.	Shadow	Egress	25	5	54		I.	Transit	Egress	30	12	51	
I.	Occult.	Disapp.	26	0	16		I.	Shadow	Egress	30	13	21	
I.	Eclipse	Reapp.	26	3	1	19.7	I.	Occult.	Disapp.	31	7	47	
II.	Transit	Ingress	26	5	6		I.	Eclipse	Reapp.	31	10	27	8.3
II.	Shadow	Ingress	26	6	17		II.	Occult.	Disapp.	31	13	36	
II.	Transit	Egress	26	7	32		II.	Eclipse	Reapp.	31	16	58	5.5

WASHINGTON MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I. 	III. 
II. 	IV. *Not Eclipsed.*

The Satellites are not visible from October 31st to end of the Year, Jupiter being too near the Sun.

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

		h	m			h	m			h	m			h	m
Jan.	1	0	31.8	Mar.	17	3	0.3	June	1	3	51.7	Aug.	16	5	34.9
	2	19	1.5		18	21	27.4		2	22	17 9		18	0	3.8
	4	13	31.0		20	15	54.6		4	16	44.2		19	18	32.8
	6	8	0.6		22	10	21.7		6	11	10.5		21	13	1.7
	8	2	30.2		24	4	48.7		8	5	36.9		23	7	30.8
	9	20	59.7		25	23	15.6		10	0	3.3		25	1	59.9
	11	15	29.1		27	17	42.6		11	18	29.8		26	20	29.1
	13	9	58.5		29	12	9.3		13	12	56.3		28	14	58.4
	15	4	27.8		31	6	36.1		15	7	22.9		30	9	27.6
	16	22	57.2	April	2	1	2.7		17	1	49.6	Sept.	1	3	56.9
	18	17	26.4		3	19	29.3		18	20	16.3		2	22	26.3
	20	11	55.7		5	13	55.9		20	14	43.0		4	16	55.6
	22	6	24.8		7	8	22.5		22	9	9.8		6	11	25.1
	24	0	54.1		9	2	48.9		24	3	36.8		8	5	54.6
	25	19	23.1		10	21	15.4		25	22	3.7		10	0	24.0
	27	13	52.1		12	15	41.8		27	16	30.8		11	18	53.6
	29	8	21.0		14	10	8.2		29	10	57.8		13	13	23.2
	31	2	50.1		16	4	34.4	July	1	5	25.0		15	7	52.9
Feb.	1	21	18.9		17	23	0.6		2	23	52.3		17	2	22.6
	3	15	47.7		19	17	26.7		4	18	19.5		18	20	52.3
	5	10	16.4		21	11	52.9		6	12	46.9		20	15	22.1
	7	4	45.1		23	6	18.9		8	7	14.4		22	9	51.9
	8	23	13.8		25	0	45.1		10	1	41.8		24	4	21.7
	10	17	42.4		26	19	11 2		11	20	9.4		25	22	51.6
	12	12	10.8		28	13	37.3		13	14	37.0		27	17	21.4
	14	6	39.3		30	8	3.3		15	9	4.8		29	11	51.4
	16	1	7.6	May	2	2	29.2		17	3	32.6	Oct.	1	6	21.3
	17	19	36.0		3	20	55.3		18	22	0.5		3	0	51.3
	19	14	4.2		5	15	21.3		20	16	28.3		4	19	21.2
	21	8	32.4		7	9	47.2		22	10	56.3		6	13	51.2
	23	3	0.5		9	4	13.2		24	5	24.4		8	8	21.2
	24	21	28.6		10	22	39.1		25	23	52.5		10	2	51.3
	26	15	56.5		12	17	5.1		27	18	20.7		11	21	21.4
	28	10	24.5		14	11	30.9		29	12	48.9		13	15	51.6
March	1	4	52.4		16	5	56.9		31	7	17.1		15	10	21.7
	2	23	20.3		18	0	22.9	Aug.	2	1	45.5		17	4	51.8
	4	17	48.0		19	18	48.9		3	20	14.0		18	23	22.0
	6	12	15.7		21	13	14.9		5	14	42.5		20	17	52.2
	8	6	43.3		23	7	41.0		7	9	11.1		22	12	22.4
	10	1	10.9		25	2	7.0		9	3	39.8		24	6	52.6
	11	19	38.3		26	20	33.2		10	22	8.4		26	1	22.8
	13	14	5.7		28	14	59.3		12	16	37.2		27	19	53.1
	15	8	33.0		30	9	25.5		14	11	6.0		29	14	23.3
													31	8	53.6

SATELLITE II.

		h	m			h	m			h	m			h	m
Jan.	3	15	39.0	Jan.	28	12	59.7	Feb.	22	10	0.5	March	18	6	36.7
	7	5	0.2	Feb.	1	2	18.4		25	23	15.8		21	19	48.2
	10	18	21.0		4	15	36.6		29	12	30.6		25	8	59.4
	14	7	41.5		8	4	54.4	March	4	1	44.9		28	22	10.1
	17	21	1.6		11	18	11.5		7	14	58.8	April	1	11	20.4
	21	10	21.3		15	7	28.4		11	4	11.9		5	0	30.0
	24	23	40.7		18	20	44.7		14	17	24.5		8	13	39.3

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

		h	m			h	m			h	m			h	m
April	12	2	48.1	June	4	7	44.3	July	27	13	53.1	Sept.	15	8	34.9
	15	15	56.7		7	20	53.0		31	3	10.8		18	21	58.4
	19	5	4.8		11	10	2.7	Aug.	3	16	27.9		22	11	20.9
	22	18	12.9		14	23	12.2		7	5	46.6		26	0	45.0
	26	7	20.4		18	12	23.0		10	19	4.7		29	14	8.2
	29	20	27.9		22	1	33.4		14	8	24.4	Oct.	3	3	32.7
May	3	9	35.1		25	14	45.1		17	21	43.5		6	16	56.3
	6	22	42.5		29	3	56.7		21	11	4.0		10	6	21.2
	10	11	49.5	July	2	17	9.7		25	0	23.9		13	19	45.2
	14	0	57.0		6	6	22.4		28	13	45.3		17	9	10.4
	17	14	4.3		9	19	36.5	Sept.	1	3	6.1		20	22	34.8
	21	3	11.9		13	8	50.3		4	16	28.3		24	12	0.1
	24	16	19.3		16	22	5.6		8	5	49.8		28	1	24.6
	28	5	27.5		20	11	20.6		11	19	12.7		31	14	50.2
	31	18	35.4		24	0	37.1								

SATELLITE III.

		h	m			h	m			h	m			h	m
Jan.	7	4	19.8	Mar.	25	23	43.9	June	12	12	36.7	Aug.	23	2	13.0
	14	8	34.3	April	2	3	15.7		19	16	2.8		30	6	21.3
	21	12	45.8		9	6	42.9		26	19	33.3	Sept.	6	10	32.2
	28	16	54.5		16	10	6.7	July	3	23	8.3		13	14	45.8
Feb.	4	20	59.7		23	13	27.0		11	2	48.1		20	19	1.8
	12	1	2.3		30	16	45.0		18	6	31.6		27	23	20.2
	19	5	0.4	May	7	20	2.0		25	10	19.4	Oct.	5	3	41.2
	26	8	54.3		14	23	18.5	Aug.	1	14	11.6		12	8	3.9
March	4	12	43.4		22	2	35.8		8	18	7.9		19	12	28.7
	11	16	28.0		29	5	53.8		15	22	8.7		26	16	54.0
	18	20	8.3	June	5	9	14.1								

Factors by which x' and y' in the following Table must be multiplied to obtain the coördinates x and y for any time.

p = the inclination of the northern semi-minor axis of the apparent ellipse to the circle of declination; + East, — West.

x and y at the time of the visible phase of every fourth eclipse for the Ist, of every second eclipse for the II^{d}, and of every eclipse for the III^{d} and IVth Satellites.

SATELLITE I.

Date, 1864.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date, 1864.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x'.	Factor for y'.	p.	x.	y.		Factor for x'.	Factor for y'.	p.	x.	y.
Jan. 1	0.868	−0.757	+15° 54′.8	−28″	−5″	June 4	1.169	−1.072	+16° 6′.1	+30″	−7″
8	0.881	0.778	15 29.5	30	5	11	1.156	1.049	16 20.4	32	6
15	0.896	0.799	15 5.3	31	5	18	1.140	1.024	16 32.4	34	6
22	0.913	0.821	14 42.9	32	5	25	1.122	0.998	16 41.7	36	6
29	0.931	0.843	14 22.5	33	5	July 2	1.103	0.970	16 48.1	37	6
Feb. 5	0.950	−0.866	+14 4.4	−34	−5	10	1.082	−0.941	+16 51.4	+38	−6
12	0.970	0.889	13 49.0	35	5	17	1.060	0.913	16 51.8	38	6
19	0.992	0.913	13 36.6	36	5	24	1.038	0.886	16 49.2	38	5
26	1.014	0.939	13 27.3	36	6	31	1.017	0.859	16 43.6	38	5
March 4	1.036	0.965	13 21.4	37	6	Aug. 7	0.996	0.834	16 35.1	37	5
11	1.058	−0.991	+13 19.1	−37	−6	14	0.976	−0.811	+16 23.7	+36	−5
18	1.081	1.017	13 20.4	37	6	21	0.956	0.790	16 9.6	35	5
25	1.103	1.041	13 25.3	36	6	28	0.938	0.771	15 52.8	34	5
April 2	1.123	1.063	13 33.5	35	7	Sept. 4	0.921	0.754	15 33.5	33	5
9	1.141	1.082	13 45.0	33	7	11	0.905	0.738	15 11.6	32	4
16	1.157	−1.098	+13 59.2	−31	−7	18	0.890	−0.723	+14 47.3	+31	−4
23	1.170	1.109	14 15.7	28	7	25	0.877	0.709	14 20.8	29	4
30	1.179	1.116	14 34.0	26	7	Oct. 3	0.865	0.697	13 52.1	27	4
May 7	1.185	1.118	14 53.1	−23	7	10	0.855	0.687	13 21.4	25	4
14	1.187	1.114	15 12.5	+20	7	17	0.846	0.677	12 48.8	23	4
21	1.185	−1.105	+15 31.6	+24	−7	24	0.839	−0.669	+12 14.4	+22	−4
28	1.179	−1.091	+15 49.6	+27	−7	31	0.833	−0.662	+11 38.7	+21	−4

SATELLITE II.

Date, 1864.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date, 1864.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x'.	Factor for y'.	p.	x.	y.		Factor for x'.	Factor for y'.	p.	x.	y.
Jan. 3	0.872	−0.757	+15° 59′.1	−34″	− 9″	June 7	1.163	−1.036	+16° 24′.9	+35″	−12″
10	0.886	0.773	15 33.5	36	9	14	1.149	1.013	16 38.5	38	12
17	0.902	0.791	15 9.3	38	9	22	1.132	0.989	16 49.4	41	12
24	0.919	0.811	14 47.0	40 14	10	29	1.113	0.963	16 57.4	44	11
Feb. 1	0.938	0.832	14 26.9	42 15	10	July 6	1.092	0.936	17 2.4	46	11
8	0.957	−0.855	+14 9.3	−44 −16	−10	13	1.071	−0.909	+17 4.2	+16 +47	−10
15	0.978	0.879	13 54.6	45 17	10	20	1.050	0.884	17 3.1	17 47	10
22	1.000	0.903	13 43.0	46 17	11	27	1.028	0.860	16 58.9	18 47	10
29	1.023	0.928	13 34.8	46 17	11	Aug. 3	1.007	0.836	16 51.6	18 47	10
March 7	1.046	0.954	13 30.2	46 16	11	10	0.986	0.814	16 41.4	18 46	10
14	1.068	−0.979	+13 29.2	−45	−12	17	0.966	−0.793	+16 28.2	+17 +45	− 9
21	1.090	1.003	13 31.8	44	12	25	0.947	0.775	16 12.2	16 44	9
28	1.111	1.025	13 38.1	42	12	Sept. 1	0.930	0.758	15 53.6	15 42	9
April 5	1.131	1.046	13 47.9	40	12	8	0.913	0.743	15 32.4	14 40	9
12	1.148	1.063	14 0.9	37	13	15	0.898	0.729	15 8.6	38	9
19	1.163	−1.076	+14 16.3	−33	−13	22	0.884	−0.717	+14 42.4	+36	− 9
26	1.175	1.085	14 33.9	29	13	29	0.871	0.705	14 13.9	34	8
May 3	1.183	1.088	14 52.9	24	13	Oct. 6	0.860	0.693	13 43.3	32	8
10	1.187	1.087	15 12.6	−19	13	13	0.851	0.682	13 10.7	29	8
17	1.187	1.081	15 32.3	+20	13	20	0.843	0.672	12 36.2	27	8
24	1.182	−1.071	+15 51.3	+26	−13	28	0.836	−0.664	+12 0.0	+24	− 8
31	1.174	−1.056	+16 9.0	+31	−13						

SATELLITE III.

Date, 1864.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
				Disappearance.		Reappearance.	
	Factor for x'.	Factor for y'.	p.	x.	y.	x.	y.
Jan. 7	0.879	−0.722	+15° 43′.8	−45″	−12″	−28″	−12″
14	0.894	0.740	15 19.3	48	12	31	12
21	0.911	0.760	14 56.6	51	13	34	13
28	0.929	0.781	14 35.9	54	13	36	13
Feb. 4	0.948	0.803	14 17.5	56	14	38	14
12	0.968	−0.827	+14 1.7	−58	−14	−40	−14
19	0.990	0.851	13 49.0	59	15	41	15
26	1.012	0.875	13 39.5	60	15	41	15
March 4	1.035	0.900	13 33.5	60	15	41	15
11	1.058	0.925	13 31.2	59	16	39	16
18	1.081	−0.949	+13 32.4	−57	−16	−37	−16
25	1.103	0.972	13 37.2	54	17	33	16
April 2	1.123	0.993	13 45.6	50	17	29	17
9	1.141	1.010	13 57.2	45	18	24	17
16	1.158	1.024	14 11.6	40	18	18	18
23	1.172	−1.035	+14 28.2	−33	−18	−11	−18
30	1.182	1.040	14 46.5	25	18	. .	. .
May 7	1.187	1.040	15 5.8	−16	18	. .	. .
14	1.188	1.035	15 25.3	. .	. .	+14	18
22	1.185	1.024	15 44.4	. .	. .	22	18
29	1.179	−1.009	+16 2.3	. .	. .	+29	−17
June 5	1.168	0.990	16 18.7	+15	−17	36	17
12	1.154	0.968	16 32.9	22	17	42	17
19	1.138	0.943	16 44.6	28	17	48	17
26	1.120	0.917	16 53.5	33	16	54	16
July 3	1.100	−0.891	+16 59.5	+37	−16	+58	−16
11	1.078	0.864	17 2.5	40	15	60	15
18	1.056	0.838	17 2.4	41	15	62	15
25	1.034	0.813	16 59.3	42	14	63	14
Aug. 1	1.013	0.789	16 53.2	42	14	63	14
8	0.992	−0.766	+16 44.1	+42	−13	+62	−13
15	0.971	0.745	16 32.1	41	13	60	13
23	0.952	0.726	16 17.3	39	12	58	12
30	0.934	0.709	15 59.8	37	12	56	12
Sept. 6	0.917	0.693	15 39.7	35	12	53	12
13	0.901	−0.679	+15 17.1	+32	−12	+50	−12
20	0.887	0.666	14 52.1	29	12	47	11
27	0.874	0.655	14 24.8	26	11	44	11
Oct. 5	0.863	0.646	13 55.2	22	11	40	11
12	0.853	0.637	13 23.6	18	11	36	11
19	0.844	−0.630	+12 50.0	+14	−11	+32	−11
26	0.837	−0.623	+12 14.7	+11	−11	+28	−11

SATELLITE IV.

Date, 1864.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x'.	Factor for y'.	p.	Disappearance.		Reappearance.	
				x.	y.	x.	y.

SATELLITE I.

COÖRDINATES IN THE MEAN APPARENT ELLIPSE, DESCRIBED BY THE SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER FROM THE SUN, FOR THE TIME (t) AFTER GEOCENTRIC SUPERIOR CONJUNCTION.

t	x'	y'	t	x'	y'	t	x'	y'
d h m	″	″	d h m	″	″	d h m	″	″
0 0 0	+ 0.0	+ 6.6	0 5 20	+ 77.5	+ 4.7	0 10 40	+109.1	— 0.1
0 0 20	5.4	6.6	0 5 40	81.2	4.4	0 11 0	109.0	0.4
0 0 40	10.8	6.6	0 6 0	84.7	4.2	0 11 20	108.6	0.7
0 1 0	16.1	6.6	0 6 20	88.0	3.9	0 11 40	107.9	1.0
0 1 20	21.4	6.5	0 6 40	91.1	3.7	0 12 0	106.9	1.3
0 1 40	+ 26.6	+ 6.4	0 7 0	+ 94.0	+ 3.4	0 12 20	+105.7	— 1.7
0 2 0	31.8	6.3	0 7 20	96.6	3.1	0 12 40	104.2	2.0
0 2 20	36.9	6.2	0 7 40	99.0	2.8	0 13 0	102.5	2.3
0 2 40	42.0	6.1	0 8 0	101.1	2.5	0 13 20	100.5	2.6
0 3 0	46.9	6.0	0 8 20	103.0	2.2	0 13 40	98.3	2.9
0 3 20	+ 51.7	+ 5.8	0 8 40	+104.7	+ 1.9	0 14 0	+ 95.8	— 3.2
0 3 40	56.4	5.7	0 9 0	106.1	1.6	0 14 20	93.1	3.5
0 4 0	60.9	5.5	0 9 20	107.3	1.3	0 14 40	90.2	3.7
0 4 20	65.3	5.3	0 9 40	108.1	0.9	0 15 0	87.1	4.0
0 4 40	69.5	5.1	0 10 0	108.7	0.6	0 15 20	83.7	4.3
0 5 0	+ 73.6	+ 4.9	0 10 20	+109.1	+ 0.3	0 15 40	+ 80.1	— 4.5

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE I.

t	x'	y	t	x'	y'	t	x'	y'
d. h. m.	"	"	d. h. m.	"	"	d. h. m.	"	"
0 16 0	+ 76.4	— 4.7	1 1 40	— 66.6	— 5.2	1 11 0	— 97.6	+ 3.0
0 16 20	72.5	5.0	1 2 0	70.8	5.0	1 11 20	95.1	3.3
0 16 40	68.4	5.2	1 2 20	74.8	4.8	1 11 40	92.3	3.5
0 17 0	64.1	5.4	1 2 40	78.6	4.6	1 12 0	89.3	3.8
0 17 20	59.6	5.5	1 3 0	82.2	4.4	1 12 20	86.1	4.1
0 17 40	+ 55.0	— 5.7	1 3 20	— 85.6	— 4.1	1 12 40	— 82.7	+ 4.3
0 18 0	50.3	5.9	1 3 40	88.9	3.8	1 13 0	79.1	4.6
0 18 20	45.5	6.0	1 4 0	91.9	3.6	1 13 20	75.3	4.8
0 18 40	40.5	6.1	1 4 20	94.7	3.3	1 13 40	71.3	5.0
0 19 0	35.5	6.3	1 4 40	97.3	3.0	1 14 0	67.1	5.2
0 19 20	+ 30.4	— 6.4	1 5 0	— 99.6	— 2.7	1 14 20	— 62.8	+ 5.4
0 19 40	25.2	6.4	1 5 20	101.7	2.4	1 14 40	58.3	5.6
0 20 0	19.9	6.5	1 5 40	103.5	2.1	1 15 0	53.7	5.8
0 20 20	14.6	6.6	1 6 0	105.1	1.8	1 15 20	49.0	5.9
0 20 40	9.2	6.6	1 6 20	106.4	1.5	1 15 40	44.1	6.1
0 21 0	+ 3.8	— 6.6	1 6 40	—107.5	— 1.2	1 16 0	— 39.1	+ 6.2
0 21 20	— 1.5	6.6	1 7 0	108.3	0.8	1 16 20	34.0	6.3
0 21 40	6.9	6.6	1 7 20	108.8	0.5	1 16 40	28.9	6.4
0 22 0	12.3	6.6	1 7 40	109.1	— 0.2	1 17 0	23.7	6.5
0 22 20	17.6	6.5	1 8 0	109.1	+ 0.1	1 17 20	18.4	6.5
0 22 40	— 22.9	— 6.5	1 8 20	—108.9	+ 0.5	1 17 40	— 13.0	+ 6.6
0 23 0	28.1	6.4	1 8 40	108.4	0.8	1 18 0	7.7	6.6
0 23 20	33.3	6.3	1 9 0	107.6	1.1	1 18 20	— 2.3	6.6
0 23 40	38.4	6.2	1 9 20	106.6	1.4	1 18 40	+ 3.1	6.6
1 0 0	43.4	6.1	1 9 40	105.3	1.8	1 19 0	8.5	6.6
1 0 20	— 48.3	— 5.9	1 10 0	—103.8	+ 2.1	1 19 20	+ 13.8	+ 6.6
1 0 40	53.1	5.8	1 10 20	102.0	2.4	1 19 40	19.1	6.5
1 1 0	57.7	5.6	1 10 40	— 99.9	+ 2.7	1 20 0	+ 24.4	+ 6.5
1 1 20	— 62.2	— 5.4						

SATELLITE II.

t	x'	y'	t	x'	y'	t	x'	y'
d. h. m.	"	"	d. h. m.	"	"	d. h. m.	"	"
0 0 0	+ 0.0	+12.2	0 10 40	+122.9	+ 8.6	0 21 20	+173.8	— 0.0
0 0 40	8.5	12.2	0 11 20	128.8	8.2	0 22 0	173.6	0.6
0 1 20	17.0	12.1	0 12 0	134.4	7.7	0 22 40	172.9	1.2
0 2 0	25.5	12.1	0 12 40	139.6	7.3	0 23 20	171.8	1.8
0 2 40	33.9	12.0	0 13 20	144.5	6.8	1 0 0	170.4	2.4
0 3 20	+ 42.2	+11.8	0 14 0	+149.0	+ 6.3	1 0 40	+168.5	— 3.0
0 4 0	50.5	11.7	0 14 40	153.2	5.7	1 1 20	166.2	3.5
0 4 40	58.6	11.5	0 15 20	157.0	5.2	1 2 0	163.5	4.1
0 5 20	66.5	11.3	0 16 0	160.5	4.7	1 2 40	160.4	4.7
0 6 0	74.3	11.0	0 16 40	163.6	4.1	1 3 20	157.0	5.2
0 6 40	+ 81.9	+10.8	0 17 20	+166.3	+ 3.5	1 4 0	+153.2	— 5.8
0 7 20	89.4	10.5	0 18 0	168.6	3.0	1 4 40	149.0	6.3
0 8 0	96.6	10.1	0 18 40	170.5	2.4	1 5 20	144.4	6.8
0 8 40	103.6	9.8	0 19 20	171.9	1.8	1 6 0	139.5	7.3
0 9 20	110.3	9.4	0 20 0	172.9	1.2	1 6 40	134.2	7.7
0 10 0	+116.7	+ 9.0	0 20 40	+173.6	+ 0.6	1 7 20	+128.6	— 8.2

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
1 8 0	+122.7	− 8.6	2 3 20	−103.7	− 9.8	2 22 0	−156.9	+ 5.2
1 8 40	116.5	9.0	2 4 0	110.4	9.4	2 22 40	153.0	5.8
1 9 20	110.1	9.4	2 4 40	116.8	9.0	2 23 20	148.8	6.3
1 10 0	103.4	9.8	2 5 20	123.0	8.6	3 0 0	144.2	6.8
1 10 40	96.4	10.1	2 6 0	128.9	8.2	3 0 40	139.3	7.3
1 11 20	+ 89.2	−10.5	2 6 40	−134.5	− 7.7	3 1 20	−134.1	+ 7.8
1 12 0	81.7	10.8	2 7 20	139.7	7.2	3 2 0	128.5	8.2
1 12 40	74.1	11.0	2 8 0	144.6	6.7	3 2 40	122.6	8.6
1 13 20	66.3	11.3	2 8 40	149.1	6.2	3 3 20	116.4	9.0
1 14 0	58.3	11.5	2 9 20	153.3	5.7	3 4 0	109.9	9.4
1 14 40	+ 50.2	−11.7	2 10 0	−157.1	− 5.2	3 4 40	−103.1	+ 9.8
1 15 20	42.0	11.8	2 10 40	160.6	4.6	3 5 20	96.1	10.1
1 16 0	33.7	12.0	2 11 20	163.7	4.1	3 6 0	88.9	10.5
1 16 40	25.3	12.1	2 12 0	166.4	3.5	3 6 40	81.5	10.8
1 17 20	16.8	12.1	2 12 40	168.6	2.9	3 7 20	73.9	11.0
1 18 0	+ 8.3	−12.2	2 13 20	−170.4	− 2.3	3 8 0	− 66.1	+11.3
1 18 40	− 0.2	12.2	2 14 0	171.9	1.8	3 8 40	58.1	11.5
1 19 20	8.8	12.2	2 14 40	173.0	1.2	3 9 20	50.0	11.7
1 20 0	17.3	12.1	2 15 20	173.6	− 0.6	3 10 0	41.8	11.8
1 20 40	25.7	12.1	2 16 0	173.8	+ 0.0	3 10 40	33.5	12.0
1 21 20	− 34.1	−12.0	2 16 40	−173.6	+ 0.6	3 11 20	− 25.1	+12.1
1 22 0	42.4	11.8	2 17 20	172.9	1.2	3 12 0	16.6	12.1
1 22 40	50.6	11.7	2 18 0	171.8	1.8	3 12 40	− 8.1	12.2
1 23 20	58.7	11.5	2 18 40	170.3	2.4	3 13 20	+ 0.4	12.2
2 0 0	66.7	11.3	2 19 20	168.4	3.0	3 14 0	9.0	12.2
2 0 40	− 74.5	−11.0	2 20 0	−166.2	+ 3.5	3 14 40	+ 17.5	+12.1
2 1 20	82.1	10.7	2 20 40	163.5	4.1	3 15 20	26.0	12.1
2 2 0	89.5	10.4	2 21 20	−160.4	+ 4.7	3 16 0	+ 34.4	+12.0
2 2 40	− 96.7	−10.1						

SATELLITE III.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
0 0 0	+ 0.0	+17.4	0 21 20	+194.7	+12.4	1 18 40	+277.2	+ 0.2
0 1 20	13.5	17.4	0 22 40	204.1	11.8	1 20 0	277.0	− 0.6
0 2 40	26.9	17.3	1 0 0	213.0	11.1	1 21 20	276.2	1.5
0 4 0	40.3	17.2	1 1 20	221.4	10.5	1 22 40	274.7	2.3
0 5 20	53.6	17.1	1 2 40	229.3	9.8	2 0 0	272.6	3.2
0 6 40	+ 66.8	+16.9	1 4 0	+236.6	+ 9.1	2 1 20	+269.8	− 4.0
0 8 0	79.8	16.7	1 5 20	243.3	8.3	2 2 40	266.4	4.8
0 9 20	92.7	16.4	1 6 40	249.5	7.6	2 4 0	262.3	5.6
0 10 40	105.3	16.1	1 8 0	255.1	6.8	2 5 20	257.6	6.4
0 12 0	117.6	15.8	1 9 20	260.0	6.0	2 6 40	252.3	7.2
0 13 20	+129.7	+15.4	1 10 40	+264.3	+ 5.2	2 8 0	+246.4	− 8.0
0 14 40	141.5	15.0	1 12 0	268.0	4.4	2 9 20	240.0	8.7
0 16 0	153.0	14.5	1 13 20	271.1	3.6	2 10 40	233.0	9.4
0 17 20	164.1	14.0	1 14 40	273.6	2.7	2 12 0	225.4	10.1
0 18 40	174.7	13.5	1 16 0	275.5	1.9	2 13 20	217.3	10.8
0 20 0	+184.9	+13.0	1 17 20	+276.7	+ 1.1	2 14 40	+208.6	−11.5

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
2 16 0	+199.5	−12.1	4 6 40	−158.4	−14.3	5 20 0	−255.1	+ 6.8
2 17 20	189.9	12.7	4 8 0	169.3	13.8	5 21 20	249.5	7.6
2 18 40	179.9	13.3	4 9 20	179.8	13.3	5 22 40	243.3	8.3
2 20 0	169.4	13.8	4 10 40	189.9	12.7	6 0 0	236.6	9.1
2 21 20	158.5	14.3	4 12 0	199.5	12.1	6 1 20	229.3	9.8
2 22 40	+147.2	−14.8	4 13 20	−208.6	−11.5	6 2 40	−221.4	+10.5
3 0 0	135.6	15.2	4 14 40	217.3	10.8	6 4 0	213.0	11.1
3 1 20	123.7	15.6	4 16 0	225.5	10.1	6 5 20	204.1	11.8
3 2 40	111.5	16.0	4 17 20	233.1	9.4	6 6 40	194.7	12.4
3 4 0	99.0	16.3	4 18 40	240.1	8.7	6 8 0	184.9	13.0
3 5 20	+ 86.3	−16.6	4 20 0	−246.5	− 8.0	6 9 20	−174.7	+13.5
3 6 40	73.3	16.8	4 21 20	252.3	7.2	6 10 40	164.1	14.0
3 8 0	60.2	17.0	4 22 40	257.6	6.4	6 12 0	153.0	14.5
3 9 20	47.0	17.2	5 0 0	262.3	5.6	6 13 20	141.5	15.0
3 10 40	33.6	17.3	5 1 20	266.4	4.8	6 14 40	129.7	15.4
3 12 0	+ 20.2	−17.4	5 2 40	−269.8	− 4.0	6 16 0	−117.6	+15.8
3 13 20	+ 6.7	17.4	5 4 0	272.6	3.2	6 17 20	105.2	16.1
3 14 40	− 6.8	17.4	5 5 20	274.7	2.3	6 18 40	92.6	16.4
3 16 0	20.3	17.4	5 6 40	276.2	1.5	6 20 0	79.8	16.7
3 17 20	33.7	17.3	5 8 0	277.0	− 0.6	6 21 20	66.8	16.9
3 18 40	− 47.1	−17.2	5 9 20	−277.2	+ 0.2	6 22 40	− 53.6	+17.1
3 20 0	60.3	17.0	5 10 40	276.7	1.1	7 0 0	40.3	17.2
3 21 20	73.4	16.8	5 12 0	275.5	1.9	7 1 20	26.9	17.3
3 22 40	86.3	16.6	5 13 20	273.7	2.7	7 2 40	− 13.4	17.4
4 0 0	99.0	16.3	5 14 40	271.2	3.6	7 4 0	+ 0.1	17.4
4 1 20	−111.5	−16.0	5 16 0	−268.1	+ 4.4	7 5 20	+ 13.6	+17.4
4 2 40	123.7	15.6	5 17 20	264.4	5.2	7 6 40	27.0	17.3
4 4 0	135.7	15.2	5 18 40	−260.1	+ 6.0	7 8 0	+ 40.4	+17.2
4 5 20	−147.2	−14.8						

SATELLITE I·V.

t	x′	y′	t	x′	y′	t	x′	y′
d. h.	″	″	d. h.	″	″	d. h.	″	″
0 0	+ 0.0	+34.8	2 0	+332.3	+25.5	4 0	+486.2	+ 2.5
0 3	22.8	34.8	2 3	348.6	24.3	4 3	487.3	+ 0.8
0 6	45.6	34.7	2 6	364.1	23.1	4 6	487.3	− 0.8
0 9	68.3	34.5	2 9	378.9	21.9	4 9	486.3	2.4
0 12	90.9	34.2	2 12	392.9	20.6	4 12	484.2	4.1
0 15	+113.2	+33.9	2 15	+406.0	+19.3	4 15	+480.9	− 5.7
0 18	135.3	33.5	2 18	418.2	17.9	4 18	476.6	7.3
0 21	157.1	33.0	2 21	429.5	16.5	4 21	471.3	8.9
1 0	178.5	32.4	3 0	439.8	15.0	5 0	465.0	10.4
1 3	199.6	31.8	3 3	449.1	13.5	5 3	457.7	12.0
1 6	+220.3	+31.1	3 6	+457.5	+12.0	5 6	+449.3	−13.5
1 9	240.4	30.3	3 9	464.9	10.5	5 9	439.9	15.0
1 12	260.0	29.5	3 12	471.3	8.9	5 12	429.6	16.4
1 15	279.0	28.6	3 15	476.6	7.3	5 15	418.4	17.9
1 18	297.4	27.6	3 18	480.8	5.7	5 18	406.2	19.3
1 21	+315.2	+26.6	3 21	+484.0	+ 4.1	5 21	+393.1	−20.6

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

t		x'	y'	t		x'	y'	t		x'	y'
d.	h.	″	″	d.	h.	″	″	d.	h.	″	″
6	0	+379.2	−21.9	9	18	−240.1	−30.3	13	12	−457.6	+12.0
6	3	364.4	23.1	9	21	259.7	29.5	13	15	449.3	13.5
6	6	348.8	24.3	10	0	278.7	28.6	13	18	440.0	15.0
6	9	332.5	25.5	10	3	297.2	27.6	13	21	429.7	16.4
6	12	315.4	26.6	10	6	315.0	26.6	14	0	418.5	17.8
6	15	+297.6	−27.6	10	9	−332.1	−25.5	14	3	−406.3	+19.2
6	18	279.2	28.5	10	12	348.4	24.4	14	6	393.2	20.6
6	21	260.2	29.4	10	15	363.9	23.2	14	9	379.3	21.9
7	0	240.6	30.3	10	18	378.7	21.9	14	12	364.6	23.1
7	3	220.5	31.1	10	21	392.7	20.6	14	15	349.1	24.3
7	6	+199.9	−31.8	11	0	−405.8	−19.3	14	18	−332.8	+25.4
7	9	178.8	32.4	11	3	418.0	17.9	14	21	315.7	26.5
7	12	157.4	33.0	11	6	429.3	16.5	15	0	298.0	27.5
7	15	135.6	33.5	11	9	439.6	15.0	15	3	279.6	28.5
7	18	113.5	33.9	11	12	449.0	13.5	15	6	260.5	29.4
7	21	+ 91.2	−34.2	11	15	−457.4	−12.0	15	9	−240.9	+30.3
8	0	68.7	34.5	11	18	464.8	10.5	15	12	220.8	31.1
8	3	46.0	34.7	11	21	471.2	8.9	15	15	200.2	31.8
8	6	23.2	34.8	12	0	476.5	7.3	15	18	179.2	32.4
8	9	+ 0.3	34.8	12	3	480.8	5.7	15	21	157.7	33.0
8	12	− 22.5	−34.8	12	6	−484.0	− 4.1	16	0	−135.9	+33.5
8	15	45.3	34.7	12	9	486.2	2.5	16	3	113.8	33.9
8	18	68.0	34.5	12	12	487.3	− 0.8	16	6	91.5	34.2
8	21	90.5	34.2	12	15	487.3	+ 0.8	16	9	69.0	34.5
9	0	112.9	33.9	12	18	486.3	2.4	16	12	46.3	34.7
9	3	−135.0	−33.5	12	21	−484.2	+ 4.0	16	15	− 23.5	+34.8
9	6	156.8	33.0	13	0	480.9	5.7	16	18	− 0.6	34.8
9	9	178.2	32.4	13	3	476.6	7.3	16	21	+ 22.2	34.8
9	12	199.3	31.8	13	6	471.3	8.9	17	0	+ 45.0	+34.7
9	15	−220.0	−31.1	13	9	−465.0	+10.5				

THE APPARENT ELEMENTS OF SATURN'S RING.

Sidereal Date 0h.	*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-minor Axis to Circle of Declination from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Equator.	*u′* Ecliptic.
0	38″.71	7″.62	−2° 19′.5	+11° 20′.8	+ 8° 50′.4	250° 56′.4	207° 46′.3
20	40.07	7.99	2 15.4	11 30.3	9 7.3	251 31.0	208 21.0
40	41.42	8.17	2 15.9	11 22.3	9 24.1	251 26.5	208 16.6
60	42.55	8.10	2 20.7	10 58.5	9 40.9	250 45.0	207 35.1
80	43.26	7.79	2 28.8	10 23.1	9 57.5	249 34.9	206 25.2
100	43.40	7.33	2 38.4	9 43.5	10 14.1	248 11.3	205 1.6
120	42.94	6.81	2 47.4	9 7.7	10 30.6	246 51.9	203 42.3
140	41.99	6.36	2 54.1	8 43.0	10 47.0	245 52.3	202 42.8
160	40.74	6.07	2 57.4	8 34.2	11 3.3	245 23.5	202 14.0
180	39.37	5.97	2 56.6	8 43.0	11 19.5	245 30.1	202 20.8
200	38.06	6.04	2 51.9	9 8.4	11 35.6	246 12.0	203 2.8
220	36.92	6.28	2 43.6	9 47.9	11 51.7	247 25.5	204 16.3
240	36.02	6.65	2 32.3	10 37.9	12 7.6	249 5.0	205 55.9
260	35.42	7.11	2 18.5	11 34.7	12 23.4	251 4.2	207 55.2
280	35.13	7.65	2 3.1	12 34.3	12 39.2	253 15.9	210 7.0
300	35.16	8.24	1 46.9	13 32.8	12 54 8	255 32.5	212 23.7
320	35.52	8.86	1 30.9	14 26.6	13 10.4	257 45.8	214 37.0
340	36.20	9.50	1 16.3	15 12.4	13 25.8	259 46.8	216 38.2
360	37.18	10.11	1 4.1	15 47.1	13 41.2	261 26.4	218 17.8
366	37.52	10.29	−1 1.1	+15 55.0	+13 45.7	261 50.8	218 42.2

Factor which is to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring = 0.8801 log. Factor = 9.9445
The outer ellipse of the inner Ring = 0.8599 " = 9.9344
The inner ellipse of the inner Ring = 0.6650 " = 9.8228
The inner ellipse of Bond's dusky Ring = 0.5486 " = 9.7392

NOTE. — The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.

1864.	Venus.	Mars.	1864.	Venus.	Mars
January 15	0.667	0.966	July 15	1.000	0.847
February 15	0.769	0.946	August 15	0.990	0.846
March 15	0.844	0.924	September 15	0 961	0.865
April 15	0.908	0.900	October 15	0.917	0.914
May 15	0.955	0.878	November 15	0.858	0.985
June 15	0.988	0.859	December 15	0.786	0.988

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m			°	'
Jan.	2	6	58	☌	♄ ☾ ..... ♄ +	5	59
	4	16	55	☌	♃ ☾ ..... ♃ +	1	31
	5	8	46	☌	♀ ☾ ..... ♀ +	2	28
	5	12	1		♀ greatest Hel. Lat. N.		
	6	8	21	☌	♂ ☾ ..... ♂ −	1	45
	7	23	59	□	♄ ☉		
	8	16	41		☿ greatest elong. E.	19	3
	10	1	3	☌	☿ ☾ ..... ☿ −	5	31
	11	18	51		☿ in ☊		
	13	20	7	☌	♆ ☾ ..... ♆ −	5	51
	15	1	49		☿ stationary.		
	16	8	35		☿ in Perihelion.		
	19	17	23	☌	♅ ☾ ..... ♅ +	2	21
	24	10	57	☌	☿ ☉ Inf.		
	26	16	40		☿ greatest Hel. Lat. N.		
	27	19	–		♄ stationary.		
	29	14	57	☌	♄ ☾ ..... ♄ +	5	49
Feb.	1	8	38	☌	♃ ☾ ..... ♃ +	0	58
	4	4	53	☌	♀ ☾ ..... ♀ −	1	49
	4	5	56	☌	♂ ☾ ..... ♂ −	3	51
	5	1	50		☿ stationary.		
	5	12	29	☌	♀ ♂ ..... ♀ +	1	57
	5	13	50	☌	☿ ☾ ..... ☿ −	1	54
	10	5	55	☌	♆ ☾ ..... ♆ −	5	33
	15	4	11	□	♃ ☉		
	15	22	6	☌	♅ ☾ ..... ♅ +	2	31
	18	6	5		☿ greatest elong. W.	26	31
	19	4	8		☿ in ☋		
	25	19	13	☌	♄ ☾ ..... ♄ +	5	46
	27	0	–		♅ stationary.		
	28	19	6	☌	♃ ☾ ..... ♃ +	0	33
	29	8	14		☿ in Aphelion.		
Mar.	1	13	28		♀ in ☋		
	4	3	45	☌	♂ ☾ ..... ♂ −	5	38
	5	3	19	☌	♀ ☾ ..... ♀ −	5	24
	6	1	54	☌	☿ ☾ ..... ☿ −	7	20
	8	18	3	☌	♆ ☾ ..... ♆ −	5	19
	10	15	18	□	♅ ☉		
	12	19	36		♃ stationary.		
	14	5	17	☌	♅ ☾ ..... ♅ +	2	47
	19	15	2		☉ enters ♈, spring begins.		
	20	18	7		☿ greatest Hel. Lat. S.		
	23	21	53	☌	♄ ☾ ..... ♄ +	5	52
	25	11	10	☌	♆ ☉		
	27	0	23	☌	♃ ☾ ..... ♃ +	0	24
	29	22	19	☌	☿ ♆ ..... ☿ −	0	4
April	2	0	50	☌	♂ ☾ ..... ♂ −	6	45
	3	0	48	☌	☿ ☉ Sup.		
	3	12	59	☍	♄ ☉		
	4	0	45	☌	♀ ☾ ..... ♀ −	6	18

	d	h	m			°	'
April	4	18	21		♀ in Aphelion.		
	5	6	12	☌	♆ ☾ ..... ♆ −	5	14
	6	4	56	☌	☿ ☾ ..... ☿ −	3	1
	8	18	8		☿ in ☊		
	10	15	14	☌	♅ ☾ ..... ♅ +	3	1
	13	7	53		☿ in Perihelion.		
	19	11	36	☌	♀ ♆ ..... ♀ −	0	9
	20	1	18	☌	♄ ☾ ..... ♄ +	6	3
	23	2	40	☌	♃ ☾ ..... ♃ +	0	34
	23	15	57		☿ greatest Hel. Lat. N.		
	27	9	57		♀ greatest Hel. Lat. S.		
	29	15	44		☿ greatest elong. E.	20	53
	30	20	23	☌	♂ ☾ ..... ♂ −	6	53
May	2	16	23	☌	♆ ☾ ..... ♆ −	5	13
	3	20	16	☌	♀ ☾ ..... ♀ −	3	51
	5	–	–		☉ Eclipsed, invis. at Wash.		
	6	17	47	☌	☿ ☾ ..... ☿ +	3	49
	8	2	43	☌	♅ ☾ ..... ♅ +	3	9
	11	16	56		☿ stationary.		
	12	13	38	☍	♃ ☉		
	17	3	24		☿ in ☋		
	17	6	42	☌	♄ ☾ ..... ♄ +	6	8
	20	4	46	☌	♃ ☾ ..... ♃ +	0	52
	22	17	6	☌	☿ ☉ Inf.		
	27	7	30		☿ in Aphelion.		
	28	7	–		♂ greatest Hel. Lat. S.		
	29	14	5	☌	♂ ☾ ..... ♂ −	5	58
	30	0	0	☌	♆ ☾ ..... ♆ −	5	9
June	1	5	19	☌	☿ ♀ ..... ☿ −	2	56
	2	14	20	☌	☿ ☾ ..... ☿ −	2	59
	2	17	58	☌	♀ ☾ ..... ♀ +	0	21
	3	20	23		☿ stationary.		
	4	14	6	☌	♅ ☾ ..... ♅ +	3	14
	6	21	33	☌	♂ ♆ ..... ♂ −	0	26
	13	14	11	☌	♄ ☾ ..... ♄ +	5	59
	13	20	–		♄ stationary.		
	15	10	48	☌	♅ ☉		
	16	8	58	☌	♃ ☾ ..... ♃ +	1	0
	16	17	21		☿ greatest Hel. Lat. S.		
	17	3	9		☿ greatest elong. W	22	50
	20	11	44		☉ enters ♋, summer begins.		
	21	4	44		♂ in Perihelion.		
	22	16	40		♀ in ☊		
	23	1	38	☌	♀ ♅ ..... ♀ −	0	8
	26	5	58	☌	♆ ☾ ..... ♆ −	5	0
	27	6	5	☌	♂ ☾ ..... ♂ −	4	16
	29	5	17	□	♆ ☉		
July	1	21	11	☌	☿ ☾ ..... ☿ +	2	19
	2	0	19	☌	♅ ☾ ..... ♅ +	3	22
	2	2	15		☉ in Apogee.		

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
July	2	16	35	□ ♄ ☉		
	2	18	16	☌ ☿ ⛢ . . . . . ☿ −	0	45
	2	23	12	☌ ♀ ☾ . . . . . ♀ +	4	22
	5	17	22	☿ in ☊		
	10	7	9	☿ in Perihelion.		
	10	23	13	☌ ♄ ☾ . . . . . ♄ +	5	36
	11	9	–	♆ stationary.		
	13	16	8	☌ ♃ ☾ . . . . . ♃ +	0	50
	14	13	–	♃ stationary.		
	16	7	38	☌ ☿ ♀ . . . . . ☿ +	0	40
	16	18	14	☌ ☿ ☉ Sup.		
	17	18	33	☌ ♀ ☉ Sup.		
	20	15	12	☿ greatest Hel. Lat. N.		
	23	12	5	☌ ♆ ☾ . . . . . ♆ −	4	47
	24	20	33	☌ ♂ ☾ . . . . . ♂ −	2	12
	26	1	52	♀ in Perihelion.		
	29	9	6	☌ ⛢ ☾ . . . . . ⛢ +	3	34
Aug.	2	11	10	☌ ♀ ☾ . . . . . ♀ +	6	35
	3	16	38	☌ ☿ ☾ . . . . . ☿ +	6	19
	7	9	12	☌ ♄ ☾ . . . . . ♄ +	5	6
	10	2	0	☌ ♃ ☾ . . . . . ♃ +	0	22
	10	14	45	□ ♃ ☉		
	13	2	38	☿ in ☋		
	17	4	40	♀ greatest Hel. Lat. N.		
	18	1	55	□ ♂ ☉		
	18	6	46	☿ in Aphelion.		
	19	19	47	☌ ♆ ☾ . . . . . ♆ −	4	37
	23	8	45	☌ ♂ ☾ . . . . . ♂ −	0	8
	25	16	57	☌ ⛢ ☾ . . . . . ⛢ +	3	51
	27	23	57	☿ greatest elong. E.	26	14
Sept.	1	21	38	☌ ♀ ☾ . . . . . ♀ +	5	25
	2	22	16	☌ ☿ ☾ . . . . . ☿ −	0	24
	3	19	59	☌ ♄ ☾ . . . . . ♄ +	4	36
	6	14	3	☌ ♃ ☾ . . . . . ♃ −	0	15
	10	3	17	☿ stationary.		
	12	16	37	☿ greatest Hel. Lat. S.		
	13	11	26	☌ ☿ ♀ . . . . . ☿ −	5	36
	16	5	9	☌ ♆ ☾ . . . . . ♆ −	4	34
	20	16	6	☌ ♂ ☾ . . . . . ♂ +	1	41
	21	10	24	□ ⛢ ☉		
	22	0	46	☌ ⛢ ☾ . . . . . ⛢ +	4	7
	22	2	8	☉ enters ♎, autumn begins.		
	23	1	25	☌ ♀ ♄ . . . . . ♀ −	1	36
	23	9	50	☌ ☿ ☉ Inf.		
	29	3	43	☍ ♆ ☉		
	29	7	55	☌ ☿ ☾ . . . . . ☿ +	3	0
Oct.	1	7	46	☌ ♄ ☾ . . . . . ♄ +	4	13
	1	16	38	☿ in ☊		
	1	17	19	☿ stationary.		
	2	2	54	☌ ♀ ☾ . . . . . ♀ +	1	18
Oct.	4	4	7	☌ ♃ ☾ . . . . . ♃ −	0	52
	4	6	–	⛢ stationary.		
	6	6	24	☿ in Perihelion.		
	8	23	21	☿ greatest elong. W.	18	2
	12	6	12	♀ in ☋		
	13	9	41	☌ ♄ ☉		
	13	14	53	☌ ♆ ☾ . . . . . ♆ −	4	38
	16	14	25	☿ greatest Hel. Lat. N.		
	18	12	48	☌ ♂ ☾ . . . . . ♂ +	3	10
	19	9	3	☌ ⛢ ☾ . . . . . ⛢ +	4	14
	22	16	50	♂ in ☊		
	22	21	53	♂ stationary.		
	25	2	8	☌ ☿ ♄ . . . . . ☿ −	0	44
	27	3	30	☌ ♀ ♃ . . . . . ♀ −	1	19
	28	20	46	☌ ♄ ☾ . . . . . ♄ +	3	55
	29	9	2	☌ ☿ ☾ . . . . . ☿ +	2	6
	29	–	–	☉ Eclipsed, invis. at Wash.		
	31	20	25	☌ ♃ ☾ . . . . . ♃ −	1	27
Nov.	1	6	18	☌ ♀ ☾ . . . . . ♀ −	3	25
	9	1	54	☿ in ☋		
	9	14	16	☌ ☿ ☉ Sup.		
	9	23	12	☌ ♆ ☾ . . . . . ♆ −	4	42
	14	16	16	☌ ♂ ☾ . . . . . ♂ +	4	12
	15	11	14	♀ in Aphelion.		
	15	17	30	☌ ⛢ ☾ . . . . . ⛢ +	4	12
	19	6	2	☿ in Aphelion.		
	21	11	43	☌ ☿ ♃ . . . . . ☿ −	1	54
	25	10	38	☌ ♄ ☾ . . . . . ♄ +	3	38
	28	15	3	☌ ♃ ☾ . . . . . ♃ −	1	58
	29	–	–	♄ greatest Hel. Lat. N.		
	29	10	42	☌ ☿ ☾ . . . . . ☿ −	5	17
	29	14	19	☌ ♃ ☉		
	30	13	3	☍ ♂ ☉		
Dec.	1	9	36	☌ ♀ ☾ . . . . . ♀ −	6	43
	7	5	18	☌ ♆ ☾ . . . . . ♆ −	4	37
	8	2	44	♀ greatest Hel. Lat. S.		
	9	15	54	☿ greatest Hel. Lat. S.		
	11	8	3	☌ ♂ ☾ . . . . . ♂ +	4	35
	13	0	59	☌ ⛢ ☾ . . . . . ⛢ +	4	5
	16	11	–	♆ stationary.		
	18	7	15	☍ ⛢ ☉		
	20	19	55	☉ enters ♑, winter begins.		
	21	19	57	☿ greatest elong. E.	19	56
	23	0	7	☌ ♄ ☾ . . . . . ♄ +	3	20
	26	7	20	□ ♆ ☉		
	26	11	24	☌ ♃ ☾ . . . . . ♃ −	2	30
	28	15	55	☿ in ☊		
	29	3	20	☿ stationary.		
	29	11	51	☌ ☿ ☾ . . . . . ☿ −	4	48
	31	8	48	☌ ♀ ☾ . . . . . ♀ −	7	2

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

Abo. . . . . N. Lat. 60° 26′ 56″.8 ± 0″.11. Argelander, *Obs. Astron.*, I. p. xxi.
Long. E. from Paris, 1^{h} 19^{m} $47^{s}.3$. *Astr. Nachr.*, IX. 264.

This Observatory was abandoned, and the instruments transferred, together with the University of Finland, to Helsingfors, in consequence of the great fire of 1827, by which the University buildings, library, &c. were destroyed.

Albany. . . . . N. Lat. 42° 39′ 50″ ± 2″.
Long. E. from Washington, 0^{h} 13^{m} $12^{s}.6 \pm 0^{s}.2$. } Gould, *Astr. Journal*, V. 144.

Altona. . . . . N. Lat. 53° 32′ 45″.27. Gauss, *Bestimmung des Breiten-Unterschiedes zwischen den Sternwarten von Göttingen und Altona*, p. 71. In the edition of Schumacher's *Hülfstafeln*, published by Warnstorff, Altona, 1845, the latitude of Altona is given, p. 114, as +53° 32′ 45″.7.
Long. E. from Greenwich, 0^{h} 39^{m} $46^{s}.151 \pm 0^{s}.042$. Struve, *Expéd. Chronomet. executées in* 1844, *entre Altona et Greenwich*, p. 206.

Ann Arbor. . . N. Lat. 42° 16′ 48″. Brünnow, *Astr. Journal*, V. 112.
Long. W. from Washington, 0^{h} 26^{m} $41^{s}.0$. Brünnow, *Astr. Journal*, V. 145.

Athens. . . . . N. Lat. 37° 58′ 20″ ± 1″. Bouris, *Astr. Nachr.*, XXXIII. 197.
Long. E. from Paris, 1^{h} 25^{m} $34^{s}.23 \pm 1^{s}$. *Ergänzungs-Heft zu den Astr. Nachr.*, 1849, p. 151. This longitude was obtained from moon-culminating stars observed on ten nights at Athens and Hamburg. The result of a series observed at Athens and Copenhagen gave the longitude of Athens $6^{s}.84$ farther East, but this series was rejected. *Ibid.*, pp. 150, 151, 158. Diminishing the E. longitude of Hamburg in conformity with Struve's chronometric determination, we have for the longitude of the meridian-circle 1^{h} 25^{m} $33^{s}.73 \pm 1^{s}$.

The centre of the Observatory is $0^{s}.19$ W. from the meridian-circle, *Erg.-Heft z. d. Astr. Nachr.*, p. 152.

Berlin. . . . . N. Lat. 52° 30′ 16″.68 ± 0″.2. Encke, *Astr. Nachr.*, XXIII. 372.
For the Longitude of the centre of the Observatory, we have

	h	m	s	
Berlin E. from Altona,	0	13	48.78 ± 0.03	*Berl. Astr. Jahrb.*, 1839, [p. 275.
Altona E. from Greenwich,	0	39	46.15	
Berlin " "	0	53	34.93	

The old Observatory was situated 0′ 56″.72 North (*Berl. Astr. Jahrb.*, 1839, p. 242; *Astr. Nachr.*, XXIII. 370), and $0^s.39$ West (*Ibid.*, pp. 261, 265), of the new one. Hence we have for the old Berlin Observatory,

N. Lat. 52° 31′ 13″.4.
Long. E. from Greenwich, $0^h\ 53^m\ 34^s.54$.

Bilk. . . . . N. Lat. 51° 12′ 25″. *Astr. Nachr.*, XXVII. 300.
Long. W. from Berlin, $0^h\ 26^m\ 30^s$. *Ibid.*

Bonn. . . . . N. Lat. 50° 43′ 45″.0.
Long. E. from Paris, $0^h\ 19^m\ 3^s$. } Orally communicated by Prof. ARGELANDER to the compiler.

The provisional Observatory on the *Alter Zoll*, in which were made the observations published in Vol. I. of the Bonn series, was situated in

N. Lat. 50° 44′ 9″.
Long. E. from Paris, $0^h\ 19^m\ 5^s.5$. *Bonn Astr. Beobb.*, I. p. i.

Breslau. . . . N. Lat. 51° 6′ 56″. (MS. communication from Professor BOGUSLAWSKI to Professor ENCKE.) *Berl. Astr. Jahrb.*, 1852, p. 289. The value given in the *Berl. Jahrb.* previously to 1851, was 51° 6′ 30″.0.

The Longitude given in the table is derived from a mean of four determinations of the longitude E. from Paris, viz.: —

	h m s
Triangulation in 1805 (fire-signals), *Astr. Nachr.*, XVI. 371,	0 58 48.6
STECZKOWSKI (6 star-immersions), *Ibid.*,	48.17
HANSEN (occultations), *Astr. Nachr.*, XVII. 170,	48.74
ERMAN and PETERSEN (meteors), *Astr. Nachr.*, XIX. 27,	48.67
Mean, Breslau E. from Paris,	0 58 48.54

Brussels. . . . N. Lat. 50° 51′ 10″.7. *Annales de l'Obs. de Bruxelles*, 1837, p. 264.
Long. E. from Greenwich, $0^h\ 17^m\ 27^s.6$. QUETELET, *Mém. de l'Acad. R. de Bruxelles*, XVI. 18.

Cambridge (Eng.). N. Lat. 52° 12′ 51″.76. *Camb. Phil. Trans.*, V. 279.
Long. E. from Greenwich, $0^h\ 0^m\ 23^s.54$. *Ibid.*, III. 168.

Cambridge (Mass.). N. Lat. 42° 22′ 48″.6. PEIRCE, *Mem. Amer. Acad.*, *N. S.*, II. 203.

Long. by the telegraphic determinations of the U. S. Coast-Survey, Cambridge E. from Stuyvesant Garden, N. Y.,

	h m s
By 34 sets of clock-signals,	0 11 26.10
" 10 " " star-signals (Western),	26.13
" 24 " " " (exchanged E. and W.),	25.96
" 17 " " " (Eastern),	26.18
Mean,	0 11 26.09
Geodetic reduction to dome of Cambridge Observatory,	—0.02
Stuyvesant Garden E. of Jersey City (geodetic),	0 11.93
Cambridge E. from C. S. Station, Jersey City,	0 11 38.00
Jersey City E. from Washington (see Philadelphia),	0 12 3.54
Cambridge (dome) E. from Washington,	0 23 41.54

Cape of Good Hope. S. Lat. 33° 56′ 3″. Henderson, *Mem. R. Astr. Soc.*, VI. 130.

Long. E. from Greenwich,

	h	m	s	
By Greenwich Observations,	1	13	56.1	*Ibid.*, p. 126.
" Cambridge "			55.04	" p. 127.
" Åbo "			58.56	" p. 128.
" Edinburgh "			54.2	" p. 129.
Mean,	1	13	56.0	

Christiania. . . N. Lat. 59° 54′ 43″.7.
Long. E. from Paris, $0^h\ 33^m\ 33^s.3$. } *Astr. Journal*, II. 173.

Cincinnati. . . N. Lat. 39° 5′ 54″. *Astr. Nachr.*, XXIII. 313.

Long. W. from Washington, $0^h\ 29^m\ 46^s.85$. (U. S. Coast-Survey.) *Proc. Amer. Assoc. for Adv. Science*, Cincinnati, 1851, p. 118.

Copenhagen. . . By Copenhagen Observatory is usually understood the "Round Tower" of the University. The new instruments are, however, mounted in a temporary wooden building known as "Holkens Bastion." (See *Astr. Nachr.*, XIX. 119).

N. Lat. of the Round Tower, 55° 40′ 53″. *Astr. Nachr.*, V. 366.

For the Longitude,

Holkens Bastion E. from Altona,

	h	m	s	
Hansen (*Astr. Nachr.*, VIII. 281),	0	10	32.585	(139.88)
Schumacher (*Ast. Nachr.*, IX. 463),			32.565	(19.42)
Mean,		10	32.583	
Altona E. from Greenwich,		39	46.151	
Holkens Bastion E. from Greenwich,		50	18.734	
Round Tower E. from Holkens Bastion (Wurm, *Astr. Nachr.*, III. 438; V. 337),			0.57	
Round Tower E. from Greenwich,	0	50	19.30	

Cracow. . . . N. Lat. 50° 3′ 50″.0 ± 0.09. Weisse, *Astr. Nachr.*, VIII. 175; XVI. 256.

Longitude E. from Paris,

	h	m	s
Mean of 19 obs. by Wurm (*Astr. Nachr.*, VII. 458, VIII. 358), (6 of the 25 being rejected,)	1	10	28.986 ± 0.461
Mean of 25 obs. by Steczkowski (*Astr. Nachr.*, XVI. 352),			30.221 ± 0.301
Mean of 4 obs. by Steczkowski (*Astr. Nachr.*, XVIII. 332),			29.760 ± 0.085
Mean of 16 obs., of three occultations (Steczkowski, *Astr. Nachr.*, X. 232),			30.95 ± 0.253

Assigning to each of these determinations a weight proportional to the number of observations from which it was derived, we obtain the mean,

	h	m	s
Cracow E. from Paris,	1	10	29.78

Dorpat. . . . . N. Lat. 58° 22′ 47″.40 ± 0″.05. STRUVE, *Posit. Med.*, p. xl.

Long. E. from Paris, $1^h\ 37^m\ 32^s.70$ WURM, *Astr. Nachr.*, III. 437.
33.5 BESSEL, " III. 46.
Mean, 1 37 33.1

Dublin. . . . . N. Lat. 53° 23′ 13″.
Long. W. from Greenwich, $0^h\ 25^m\ 22^s$. *Astr. Nachr.*, X. 274.

Durham. . . . N. Lat. 54° 46′ 6″.4.
Long. W. from Greenwich, $0^h\ 6^m\ 18^s.0$. *Astr. Nachr.*, XXVI. 215.

Edinburgh. . . N. Lat. 55° 57′ 23″.2.
Long. W. from Greenwich, $0^h\ 12^m\ 43^s.0$. *Edinb. Observ.*, X. v.

Florence. . . . N. Lat. 43° 46′ 40″.8. ZACH, *Corresp. Astron.*, I. 15.
Long. E. from Paris, $0^h\ 35^m\ 40^s.2$. *Ibid.*, p. 14.

Geneva. . . . . N. Lat. by observations of pole-star, 46° 11′ 58″.72 ± 0″.1
" " " nadir-point, 58.97 ± 0.1
Mean, . 46 11 58.84 PLANTAMOUR, *Mém.*
[*de la Soc. de Physique et d'Hist. Nat. de Genève*, XI. 15.
Long. E. from Paris, $0^h\ 15^m\ 16^s.22$. *Astr. Nachr.*, XX. 7.

Georgetown. . . N. Lat. 38° 54′ 26″.1. *Astron. Journ.*, I. 69.
Long. W. from Washington, $0^h\ 0^m\ 6^s.20$. *Astron. Journ.*, I. 70.

Gotha. . . . . (Seeberg.)
N. Lat. 50° 56′ 5′.19. GAUSS, *Best. d. Breit.-Untersch.*, p. 80.
For the Longitude E. from Paris,
WURM found by 11 occultations (*Astr. Nachr.*, II. 405), $0^h\ 33^m\ 34^s.8$ ± 0.13
PETERS found (*Astr. Nachr.*, V. 68),

			Weight.
Seeberg East from	Altona,	3 10.2	2
" "	Göttingen,	3 8.9	15
West "	Königsberg,	39 5.6	18
East "	Paris,	33 34.3	24
West "	Vienna,	22 38.0	17

Whence, using the present data, we find,
Seeberg E. from Paris, 0 33 33.66
Mean, 0 33 34.2

For the Observatory attached to Professor HANSEN's house,
Long. E. from Paris, $0^h\ 33^m\ 30^s.046$. SCHUMACHER, *Astr. Nachr.*, XXIII. 263.

Göttingen. . . . GAUSS found, *Best. d. Breit.-Untersch.*, p. 71, for the N. Latitude of the meridian-circle, 51° 31′ 47″.85, with the weight 60.9.

The Longitude of the same, GAUSS found (*Ibid.*) by his trigonometrical survey to be West of the meridian-circle in Altona by 7.211 Paris toises. Using BESSEL's data we find $1^s = 148.33$ toises, whence we have,

	h	m	s
Göttingen West of Altona,	0	0	0.049
Altona East of Greenwich,	0	39	46.151
Göttingen East of Greenwich,	0	39	46.102

For the old Observatory,

Lat. = + 51° 31′ 55″.6. *Monatl. Corr.*, XXVII. 483.

Long. E. of Paris, $0^h\ 30^m\ 25^s.2$. *Astr. Nachr.*, II. 407, 408.

Greenwich. . . . N. Lat. 51° 28′ 38″.2. Airy, *Mem. Astr. Soc.*, XVII. 49.

Long. W. from Paris, $0^h\ 9^m\ 21^s.46 \pm 15$. Henderson, *Phil. Trans.*, 1827, p. 286. See also Washington.

Hamburg. . . . N. Lat. 53° 33′ 7″, by geodetical connection with Altona. *Preface to* Rümker's *Catalogue.*

The Longitude given in the table is derived thus: —

	h	m	s
Hamburg E. from Altona (Hansen, *Astr. Nachr.*, VIII. 277),	0	0	7.41
Altona E. from Greenwich (Struve, *Exp. Chron. de* 1844),	0	39	46.15
Whence Hamburg E. from Greenwich,	0	39	53.56

Hudson. . . . . N. Lat. 41° 14′ 42″.6. Loomis, *Trans. Am. Phil. Soc.*, N. S., X. 61.

Long. W. from Philadelphia (U. S. Coast-Survey),

	h	m	s
By 3 sets Eastern clock-signals,	0	25	5.72
" 2 " Western "			5.68
	0	25	5.70
Philadelphia E. from Washington,		7	33.64
Hudson W. from Washington,	0	17	32.06

Professor Loomis deduced from moon-culminations,

Hudson W. from Greenwich, $5^h\ 25^m\ 41^s.3$. *Astr. Journ.*, I. 67.

Kasan. . . . . N. Lat. 55° 47′ 23″.1. *Astr. Nachr.*, XXVIII. 47.

Long. E. from Berlin, $2^h\ 22^m\ 57^s.0$. *Berl. Astr. Jahrb.*, 1854, p. 293.

Königsberg. . . N. Lat. 54° 42′ 50″.4. Bessel, *Astr. Nachr.*, I. 248.

	h	m	s		
Long. E. from Paris,	1	12	38.8	Wurm, *Astr. Nachr.*,	III. 437.
			38.93	Bessel, "	III. 46.
Mean,	1	12	38.9		

Kremsmünster. . . N. Lat. 48° 3′ 23″.81 ± 0″.03. *Astr. Nachr.*, XXXVII. 271.

Long. E. from Paris, $0^h\ 47^m\ 11^s.96$. Schumacher, *Astr. Nachr.*, XXIII. 263.

Leipsic. . . . . (Pleissenburg.)

	°	′	″		Weight.
N. Lat. D'Arrest, *Astr. Nachr.*, XXVIII. 148,	51	20	20.7	± 0.36	26.37
D'Arrest, *Astr. Nachr.*, XXVIII. 160,			20.4		

Long. E. from Greenwich, $0^h\ 49^m\ 28^s.5$.

Leyden. . . . . N. Lat. 52° 9′ 28″.16 ± 0″.15
Long. E. from Paris, $0^h\ 8^m\ 35^s.97 \pm 0^s.19$ } Kaiser, *Astr. Nachr.*, XVII. 100.

Liverpool. . . . N. Lat. 53° 24′ 47″.40. *Memoirs R. Astr. Soc.*, XXVI. 7.
Long. W. from Greenwich, $0^h\ 12^m\ 0^s.11$. *Naut. Alm.*, 1852, p. 598.

London. . . . . (Mr. Bishop's Observatory.)
N. Lat. 51° 31′ 29″.8. *Astr. Obs. at the Observatory South Villa*, p. xix.
Long. W. from Greenwich, $0^h\ 0^m\ 37^s.1$.

Madras. . . . . N. Lat. 13° 4′ 9″.2.
Long. E. from Greenwich, $5^h\ 20^m\ 57^s$. Taylor, *Madras General Catal.*, 1844, *Pref.* p. ii.

Mannheim. . . . N. Lat. 49° 29′ 12″.9. *Astr. Nachr.*, XII. 129.
Long. E. from Paris, as determined

	h m s
By Wurm, from occultations (*Astr. Nachr.*, VIII. 458),	0 24 29.92
" connection with Strasburg (*Astr. Nachr.*, XV. 280),	29.87
" " " Vienna (*Astr. Nachr.*, XV. 279; XXIII. 263),	30.28
By connection with Dunkirk (Müffling, *Astr. Nachr.*, XV. 279),	30.05
By Olufsen from solar eclipse (*Astr. Nachr.*, XXII. 234),	30.10
Mean,	0 24 30.04

Markree. . . . N. Lat. 54° 10′ 31″.72. *Astr. Journal*, II. 12.
Long. W. from Greenwich, $0^h\ 33^m\ 48^s.4$. *Naut. Alm.*, 1852, p. 598.

Marseilles. . . . N. Lat. 43° 17′ 49″. *Monatl. Corresp.*, XIII. 139.
Long. E. from Paris, according to

	No. Obs.	h m s
Lindenau (*Monatl. Corr.*, XIX. 421),	4	0 12 7.7
Wurm (*Monatl. Corr.*, XXVI. 185),	19	7.6
" (*Astr. Nachr.*, IV. 33),	12	7.5
Innes (*Astr. Nachr.*, VIII. 435),	4	7.05
Mean,		0 12 7.53

Milan. . . . . (Brera.)
N. Lat. 45° 28′ 0″.7. *Corresp. Astron.*, V. 300; *Effem. Astr. di Milano*, 1846, *App.*, pp. 73–86.
Long. E. from Paris,

	m s	h m s
Daussy found from 31 occultations (*Conn. d. Temps*, 1836, *Add.*, p. 131),		0 27 24.91
Littrow found Milan W. from Vienna (*Ibid.*),	28 45.63	
	56 11.07	
		0 27 25.44
Mean,		0 27 25.18

Modena. . . . . N. Lat. 44° 38′ 52″.75. BIANCHI, *Astr. Nachr.*, XVI. 221; *Atti del R. Osserv. di Modena*, I. 336 (1834).

Long. E. from Milan, 0ʰ 6ᵐ 55ˢ.99. *Ibid.*, p. 337.

Hence E. from Paris,

	h m s		
By comparison with Milan	0 34 20.45		
WURM from occultations,	23.5	*Astr. Nachr.*,	I. 504.
" " "	24.5	"	III. 222.
STECZKOWSKI from occultations,	21.81	"	XVI. 299, 302.
OLUFSEN from solar eclipse,	22.32	"	XXII. 234.
Mean,	0 34 22.51		

Moscow. . . . N. Lat. 55° 45′ 19″.83 ± 0.08. SCHWEIZER, *Astr. Nachr.*, XXXVIII. 100.

Long. E. from Greenwich, 2ʰ 30ᵐ 16ˢ.93. *Astr. Nachr.*, XXXVIII. 103.

Munich. . . . (Bogenhausen.)

N. Lat. 48° 8′ 45″. SOLDNER, *Astr. Nachr.*, IX. 422.

Long. E. from Paris, 0ʰ 37ᵐ 4ˢ.98. *Astr. Nachr.*, VIII. 148.

Naples. . . . . N. Lat. 40° 51′ 46″.63. BRIOSCHI, *Astr. Nachr.*, V. 294.

The Longitude adopted is that by which PETERS has apparently made his reductions, *Astr. Nachr.*, XXIII. 302, 303, according to which we have,

Naples E. from Berlin, 0ʰ 3ᵐ 26ˢ.0.

For determinations from solar eclipses by BRIOSCHI and SANTINI, see *Astr. Nachr.*, VI. 413.

Olmutz. . . . . N. Lat. 49° 35′ 40″.
Long. E. from Greenwich, 1ʰ 9ᵐ 0ˢ.1. } *Astr. Nachr.*, XXXVII. 77.

Oxford. . . . . N. Lat. 51° 45′ 36″.0.
Long. W. from Greenwich, 0ʰ 5ᵐ 2ˢ.6. } *Naut. Alm.*, 1852, p. 599.

Padua. . . . . N. Lat. 45° 24′ 2″.5. SANTINI, *Astr. Nachr.*, VI. 411; XVII. 346.

Long. E. from Paris,

	h m s	h m s
WURM (*Astr. Nachr.*, IV. 347),		0 38 7.7
Padua E. from Milan by powder signals (FALLON, *Astr. Nachr.*, IV. 115),	0 10 43.27	
Milan E. from Paris,	27 24.18	
		0 38 7.45
Mean, Padua E. from Paris,		0 38 7.57

Palermo. . . . N. Lat. 38° 6′ 44″. CACCIATORE, *Del Real Osservatorio di Palermo Libri*, VII., VIII., IX., p. 2; *Storia Celeste del R. Osserv. di Palermo*, in *Ann. d. Wiener Sternwarte*, XXIV. 6.

Long. E. from Paris, 0ʰ 44ᵐ 4ˢ.0. DAUSSY, *Add. Conn. d. Temps*, 1835, p. 8.

BIANCHI, *Astr. Nachr.*, XVII. 350, calls the latitude of the Palermo Observatory, +38° 6′ 25″.50.

Paramatta. . . . S. Lat. 33° 48′ 49″.79. Rümker, *Phil. Trans.*, 1829, Part III. p. 16.
Long. E. from Greenwich, $10^h\ 4^m\ 6^s.25$. *Ibid.*, p. 29.

Paris. . . . . N. Lat. 48° 50′ 13″.2. *Conn. d. Temps*, 1835, p. 356.
Long. as above under Greenwich.

St. Petersburg. . . (Academy.)
N. Lat. 59° 56′ 29″.67.
Long. W. from Pulkowa, $0^m\ 5^s.194$. Struve, *Description de l'Obs. de Poulkova*, p. 292.

Philadelphia. . . N. Lat. 39° 57′ 7″.5. MS. communication from Professor Kendall.
Long. E. from Washington (U. S. Coast Survey),

	m s
By 5 sets Eastern clock-signals,	7 33.66
" " Western "	33.60
Mean,	7 33.63

Long. Jersey City Station E. from Washington,

	m s
By 2 sets Eastern clock-signals,	12 3.58
" " Western "	3.52
Mean,	12 3.56

Long. W. from Jersey City Station,

By 8 sets Eastern clock-signals,	4 29.91
" " " "	29.84
Mean,	4 29.88

Hence we may use,

	h m s
Jersey City Station E. from Philadelphia,	0 4 29.89
" " " Washington,	0 12 3.53
Philadelphia " "	0 7 33.64

Prague. . . . . N. Lat. 50° 5′ 18″.5. David, *Astr. Nachr.*, VIII. 198.
Long. E. from Paris,

	h m s
Mean of 6 occultations (*Astr. Nachr.*, XVI. 299, 302),	0 48 21.66 ± 4.15
Hansen from occultations (*Astr. Nachr.*, XVII. 170),	19.59 ± 3.67
Mean, Prague E. from Paris,	0 48 20.50

Pulkowa. . . . N. Lat. 59° 46′ 18″.70. Struve, *Descr. de l'Obs. de Poulkova*, p. 290.

	h m s
Long. E. from Altona (*Exp. Chron. de* 1843, p. 144),	1 21 32.523 ± 0.039
Altona E. from Greenwich (*Exp. Chron. de* 1844, p. 206),	0 39 46.151 ± 0.042
Pulkowa E. from Greenwich (*Exp. Chron. de* 1844, p. ix.),	2 1 18.674 ± 0.057

Rome. . . . . (Collegio Romano.)
N. Lat. 41° 53′ 54″. *Conn. d. Temps*, 1840, p. 354.
Long. E. from Greenwich, $0^h\ 49^m\ 54^s.7$. *Astr. Nachr.*, VIII. 88.

San Fernando. . . N. Lat. 36° 27′ 45″. *Corresp. Astron.*, XIV. 240.
Long. W. from Paris, $0^h\ 34^m\ 10^s.6 \pm 0^s.31$. *Astr. Nachr.*, IX. 358.

Santiago. . . . (National Observatory.)
S. Lat. 33° 26′ 24″.8. Gilliss, *Astron. Journal*, III. 55.
Long. W. from Greenwich, $4^h\ 42^m\ 18^s.9$. Gilliss, *Astron. Journal*, II. 118.

Senftenberg. . . N. Lat. 50° 5′ 10″.1.
Long. E. from Berlin, $0^h\ 12^m\ 15^s$. } *Astr. Nachr.*, XXXI. 174, 331.

Upsala. . . . . N. Lat. 59° 51′ 31″.5. Schultz, *Nova Acta Reg. Soc. Sc. Upsala*, II. 206.
Long. W. from Stockholm, $0^h\ 1^m\ 43^s.64$ *Ibid.*, II. 218.
Stockholm E. from Greenwich, 1 12 14.8
Upsala E. from Greenwich, 1 10 31.2

Vienna. . . . . N. Lat. 48° 12′ 35″.5. *Berl. Astr. Jahrb.*, 1852, p. 290.
Long. E. from Paris, $0^h\ 56^m\ 11^s.07$. Schumacher, *Astr. Nachr.*, XXIII. 263.

Washington. . . N. Lat. 38° 53′ 39″.25. *Astron. Journ.*, III. 12.
Long. W. from Greenwich, as derived from data of the U. S. Coast Survey, up to 1852, $5^h\ 8^m\ 11^s.2$.

The situation of the first, or provisional, Naval Observatory, in which were made the observations published by Lieutenant Gilliss, was,
N. Lat. 38° 53′ 32″.8. Gilliss, *Astr. Obs.*, p. viii.
Long. W. from Greenwich, $5^h\ 8^m\ 4^s.6$. *Ibid.*, p. x.

Wilna. . . . . N. Lat. 54° 40′ 59″.1. *Astr. Nachr.*, IV. 562.
Long. E. from Paris,
Wurm from 22 occultations (*Astr. Nachr.*, VIII. 96), $1^h\ 31^m\ 50^s.4$
Steczkowski from 1 occultation (*Astr. Nachr.*, XVI. 302), 48.3
Mean, 1 31 50.31

These results are arranged in the following Table for reference.

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(North Latitudes and West Longitudes are considered as positive.)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
	° ′ ″	h m s	° ′ ″	° ′ ″
Åbo, ...	+60 26 56.8	— 6 37 20.0	260 40 0.6	337 42 48.6
Albany, ...	+42 39 50.0	— 0 13 12.6	356 41 51.0	73 44 39.0
Altona, ...	+53 32 45.3	— 5 47 57.4	273 0 39.8	350 3 27.8
Ann Arbor, . . .	+42 16 48.0	+ 0 26 41.0	6 40 15.0	83 43 3.0
Athens, ...	+37 58 20.0	— 6 43 6.4	259 13 24.2	336 16 12.2
Berlin, ...	+52 30 16.7	— 6 1 46.1	269 33 28.1	346 36 16.1
Bilk, ...	+51 12 25.0	— 5 35 16.1	276 10 58.1	353 13 46.1
Bonn, ...	+50 43 45.0	— 5 36 35.7	275 51 5.1	352 53 53.1
Breslau, ...	+51 6 56.0	— 6 16 21.2	265 54 42.0	342 57 30.0
Brussels, ...	+50 51 10.7	— 5 25 38.8	278 35 18.0	355 38 6.0
Cambridge (Eng.), .	+52 12 51.8	— 5 8 34.7	282 51 18.9	359 54 6.9
Cambridge (Mass.),	+42 22 48.6	— 0 23 41.5	354 4 36.9	71 7 24.9
Cape of Good Hope,	—33 56 3.0	— 6 22 7.2	264 28 12.3	341 31 0.3
Christiania, . . .	+59 54 43.7	— 5 51 6.0	272 13 30.6	349 16 18.6
Cincinnati, ...	+39 5 54.0	+ 0 29 46.9	7 26 42.8	84 29 30.8
Copenhagen, . . .	+55 40 53.0	— 5 58 30.5	270 22 22.5	347 25 10.5
Cracow, ...	+50 3 50.0	— 6 28 2.4	262 59 23.4	340 2 11.4
Dorpat, ...	+58 22 47.1	— 6 55 5.8	256 13 33.6	333 16 21.6
Dublin, ...	+53 23 13.0	— 4 42 49.2	289 17 42.0	6 20 30.0
Durham, ...	+54 46 6.4	— 5 1 53.2	284 31 42.0	1 34 30.0
Edinburgh, . . .	+55 57 23.2	— 4 55 28.2	286 7 57.0	3 10 45.0
Florence, ...	+43 46 40.8	— 5 53 12.9	271 41 47.1	348 44 35.1
Geneva, ...	+46 11 58.8	— 5 32 48.9	276 47 46.8	353 50 34.8
Georgetown, . . .	+38 54 26.1	+ 0 0 6.2	0 1 33.0	77 4 21.0
Göttingen, . . .	+51 31 47.9	— 5 47 57.3	273 0 40.5	350 3 28.5
Gotha, ...	+50 56 5.2	— 5 51 6.9	272 13 17.1	349 16 5.1
Greenwich, . . .	+51 28 38.2	— 5 8 11.2	282 57 12.0	0 0 0.0
Hamburg, ...	+53 33 7.0	— 5 48 4.8	272 58 48.6	350 1 36.6
Hudson, ...	+41 14 42.6	+ 0 17 32.1	4 23 0.9	81 25 48.9
Kasan, ...	+55 47 23.1	— 8 24 43.1	233 49 13.1	310 52 1.1
Königsberg, . . .	+54 42 50.4	— 6 30 11.6	262 27 6.6	339 29 54.6
Kremsmünster, . .	+48 3 23.8	— 6 4 44.6	268 48 50.7	345 51 38.7
Leipsic, ...	+51 20 20.7	— 5 57 39.7	270 35 4.5	347 37 52.5
Leyden, ...	+52 9 28.2	— 5 26 8.6	278 27 50.6	355 30 38.6
Liverpool, ...	+53 24 47.4	— 4 56 11.1	285 57 13.7	3 0 1.7
London, ...	+51 31 29.8	— 5 7 34.1	283 6 28.5	0 9 16.5
Madras, ...	+13 4 9.2	—10 29 8.2	202 42 57.0	279 45 45.0
Mannheim, . . .	+49 29 12.9	— 5 42 2.7	274 29 19.5	351 32 7.5
Markree, ...	+54 10 31.7	— 4 34 22.8	291 24 18.0	8 27 6.0
Marseilles, . . .	+43 17 49.0	— 5 29 40.2	277 34 57.2	354 37 45.2
Milan, ...	+45 28 0.7	— 5 44 57.8	273 45 32.4	350 48 20.4
Modena, ...	+44 38 52.8	— 5 51 55.2	272 1 12.5	349 4 0.5
Moscow, ...	+55 45 19.8	— 7 38 28.1	245 22 58.5	322 25 46.5
Munich, ...	+48 8 45.0	— 5 54 37.6	271 20 35.4	348 23 23.4
Naples, ...	+40 51 46.6	— 6 5 12.1	268 41 58.1	345 44 46.1
Olmutz, ...	+49 35 40.0	— 6 17 11.3	265 42 10.5	342 44 58.5
Oxford, ...	+51 45 36.0	— 5 3 8.6	284 12 51.0	1 15 39.0
Padua, ...	+45 24 2.5	— 5 55 40.2	271 4 56.6	348 7 44.6
Palermo, ...	+38 6 44.0	— 6 1 36.7	269 35 50.1	346 38 38.1
Paramatta, . . .	—33 48 49.8	+ 8 47 42.6	131 55 38.3	208 58 26.3
Paris, ...	+48 50 13.2	— 5 17 32.7	280 36 50.1	357 39 38.1

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
	° ′ ″	h m s	° ′ ″	° ′ ″
St. Petersburg, . .	+59 56 29.7	—7 9 24.7	252 38 49.8	329 41 37.8
Philadelphia, ...	+39 57 7.5	—0 7 33.6	358 6 35.4	75 9 23.4
Prague, ...	+50 5 18.5	—6 5 53.2	268 31 42.6	345 34 30.6
Pulkowa, ...	+59 46 18.7	—7 9 29.9	252 37 31.9	329 40 19.9
Rome, ...	+41 53 54.0	—5 58 5.9	270 28 31.5	347 31 19.5
San Fernando, . .	+36 27 45.0	—4 43 22.1	289 9 29.1	6 12 17.1
Santiago, ...	—33 26 24.8	—0 25 52.3	353 31 55.5	70 34 43.5
Senftenberg, . . .	+50 5 10.1	—6 14 1.1	266 29 43.1	343 32 31.1
Upsala, ...	+59 51 31.5	—6 18 42.4	265 19 24.0	342 22 12.0
Vienna, ...	+48 12 35.5	—6 13 43.7	266 34 4.1	343 36 52.1
Washington, . . .	+38 53 39.3	0 0 0.0	0 0 0.0	77 2 48.0
Wilna, ...	+54 40 59.1	—6 49 23.0	257 39 15.5	334 42 3.5

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

This Ephemeris is divided into two distinct parts. One part is designed for the special use of NAVIGATORS, and is adapted to the Meridian of Greenwich.

The other part is suited to the convenience of ASTRONOMERS, on this continent particularly, and is adapted to the Meridian of Washington.

THE NAUTICAL PART.

This part contains the Ephemeris of the Sun and Moon; the Distances of the Moon from the centres of the Sun and the four most conspicuous Planets, and from certain Fixed Stars; the Ephemeris of the Planets Venus, Mars, Jupiter, and Saturn; the Mean Places of 100 principal Fixed Stars, for January 1, 1864.

Time. — Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

Sidereal Time. — Sidereal Time is measured by the daily motion of the stars, or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian.

Solar Time. — Solar Time is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes; one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun*, is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is measured by the motion of this *Mean Sun;* the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it.

True or *Apparent Time* is measured by the motion of the real sun.

The difference between the *true* and *mean* time is called the *Equation of Time.* By means of it we pass from *true* to *mean* time, or the reverse. Thus, if the *true* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I. of the Calendar. If the *mean* time be given, the *true* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

The vernal equinox, by the motion of which Sidereal Time is measured, is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time, and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the Sidereal Time in common use might therefore be called *Apparent Sidereal Time*, and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed $2^{s}.3$ in a period of nineteen years, and is, therefore, of no practical importance.

Day.—According to the customs of society, the hours are counted from 0 to 12 from noon to midnight, after which they are again reckoned from 0 to 12 from midnight to noon. The *civil day* consists of twenty-four hours, but is divided in this manner into two periods, commencing at midnight. In this respect it differs from the *astronomical day*, which commences at noon. The *civil day* comprises twenty-four hours, from one midnight to the next following. The first period of twelve hours is marked A. M., the last period of twelve hours is marked P. M. The *astronomical day* also comprises twenty-four hours, but they are counted from 0 to 24, and from the noon of one day to that of the next following.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day*. Thus, January 10th, $2^{h.}$ A. M., *civil day*, is January 9th, $14^{h.}$, *astronomical day;* and January 9th, $2^{h.}$ P. M., *civil day*, is also January 9th, $2^{h.}$, *astronomical day*. The rule, then, for the transformation of the civil time into astronomical time is this: If the civil time is marked A. M., take one from the date, and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows:—

Pages I., II., III. are devoted to the Ephemeris of the Sun. Page I. contains, first, the *Apparent Right Ascension and Declination* of the sun at Greenwich apparent noon.

The former of these quantities is used for finding the error of a clock regulated to sidereal time. The difference between the time by the clock of the meridian passage of the sun, and the sun's right ascension reduced to apparent noon, is the error of the clock from sidereal time. It is also employed in determining the time by the transit of a fixed star over the meridian, as is explained in page 223 of BOWDITCH'S *American Practical Navigator*. The use of the sun's declination in finding the true amplitude and azimuth, the latitude by altitudes of the sun in and out of the meridian, the time, &c., is also so clearly defined in this standard work, which is in the hands of all American seamen, that any further explanation in this place is unnecessary. Adjoining the columns of *Right Ascension* and *Declination* are the differences of these quantities for one hour (at noon), by means of which they may be calculated for any time out of the meridian, by multiplying this difference by the hours and parts of hours from noon, and adding the amount to, or subtracting it from, the quantity at noon, according as it is increasing or decreasing. If, for example, the declination of the sun were required at $3^{h.}$ $40^{m.}$ P. M. of Saturday, January 16th, 1864, the declination of the sun would be taken out first for

	°	′	″	
January 16th, at noon.	21	1	7.5	S.
From which subtract the diff. for 1 hour, 28″.22, multiplied by 3,		1	24.7	
	20	59	42.8	
And the proportional part for 40 minutes,			18.8	
The result is the sun's declination on the 16th, at $3^{h.}$ $40^{m.}$ P. M.,	20	59	24.0	

The difference for one hour is not the same for every hour in the twenty-four; but being given in the pages of this Ephemeris for the first hour of the day, it is sufficiently accurate for the purposes of the navigator.

The column of the *Sun's Semidiameter* requires no explanation.

The column headed *Sidereal Time of the Semidiameter passing the Meridian*, is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. If the western limb has been observed, the quantity found in this column is to be added to the time of transit over the middle wire, or the mean of the times of transit over all the wires; but if the eastern limb has been observed, the quantities in this column are to be subtracted.

The next column contains the *Equation of Time*, which, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent time*, or the time given by an observation of the sun, to obtain the *mean time*, or the time shown by a clock. The heading of the column directs the manner in which the equation is to be applied, and where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. The difference for one hour is given in an adjoining column, by means of which the equation for any time from noon is easily obtained. If, for example, the equation of time for January 16th, at $3^{h.}$ $20^{m.}$ P. M., were required, we should have

	m.	s.
Equation for January 16, at noon,	9	55.44
Correction for $3^{h.}$ $20^{m.}$ (additive),		2.88
Equation, January 16, at $3^{h.}$ $20^{m.}$ P. M.,	9	58.32

Which, according to the rule at the head of the column, is *to be added* to *apparent time* to obtain *mean time*.

Page II. contains the Apparent Right Ascension and Declination of the Sun, and the Equation of Time for Greenwich *Mean* Noon; to these is added a column containing the Sidereal Time of Mean Noon.

Page III. contains the Longitude and Latitude of the Sun, and the Logarithm of the Distance of the Earth, at Greenwich Mean Noon of each day. The Longitude is given in two columns, headed λ and λ'; and one, λ, is the Sun's longitude counted from the true equinox of the date; the other, λ', is the same coördinate counted from the mean equinox of the beginning of the year. A column of hourly differences enables the computer to obtain the Sun's longitude for any hour from noon. The hourly differences of the logarithm of the Radius Vector are likewise given. The longitudes of the Sun are the true longitudes, not affected by aberration. The last column on this page contains the Mean Time of Sidereal Noon.

Page IV. contains the Moon's *Semidiameter* and *Horizontal Parallax* for every noon and midnight. The former may be corrected for any time between the dates for which it is given in the Ephemeris, by means of Table XI. of BOWDITCH'S *Navigator*, or simply by computing the proportional part.

This is readily done by considering that the semidiameter is given for every twelve hours, that the difference, therefore, between any two successive semidiameters corresponds to twelve hours, and that the difference required (or correction) is that difference which corresponds to a time less than twelve hours. If, for example, the semidiameter of the moon is to be taken out for 9 o'clock, P. M. of the 31st of January, then we say, that as twelve hours is to 6″.6, the whole difference between the semidiameters at noon and midnight of the 31st, so is nine hours to 5″.0, the correction to be added to the semidiameter at noon, because it is increasing; the moon's semidiameter, then, for Jan. $31^{d.}$ $9^{h.}$ is 15′ 28″.3. Adjoining the columns containing the Moon's

Horizontal Parallax for noon and midnight, are columns giving the change which these quantities undergo in one hour. The sign plus or minus (+ or —) is prefixed to these differences, showing whether they are additive or subtractive, or, in other words, whether the horizontal parallax is increasing or decreasing. In order to reduce the parallax to any time intermediate between those dates for which it is given in the Ephemeris, the mode of proceeding is that which has been already explained in the case of the equation of time. The Moon's *Meridian Passage*, which is given on this page to minutes and tenths of minutes, is also accompanied with a column of differences for one hour, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. Or it may be more quickly derived from BOWDITCH's Table XVIII., by simple inspection. The last column of this page contains the *Age* of the Moon, to tenths of days, or the time elapsed since the preceding new moon. It requires no explanation.

The pages from V. to XII. inclusive are taken up with the Moon's *Right Ascension and Declination*, which are given for every hour of every day in the month, and are accompanied with columns of differences for every minute of each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. These quantities are wanted for Greenwich mean time, which is either taken directly from the face of a well-regulated chronometer, or is obtained by applying the longitude, turned into time, to the local time of the computer. They have only to be corrected for the minutes and seconds of the time at Greenwich. Thus, if the right ascension and declination of the moon were required for Thursday, January $21^{d.}$ $8^{h.}$ $10^{m.}$, we have only to add to the right ascension at $8^{h.}$ as given in the Ephemeris, viz. to $6^{h.}$ $35^{m.}$ $31^{s.}.82$, the product of the difference for one minute in the adjoining column multiplied by 10, the product, that is, of $2^{s.}.1061$ by 10. or $21^{s.}.06$; the result is the moon's right ascension at the required time, equal to $6^{h.}$ $35^{m.}$ $52^{s.}.88$. If we were to take out the declination for the same date, the correction for the ten minutes above the hour would be subtractive, because the declination, unlike the right ascension, is decreasing; thus,

Moon's declination for January $21^{d.}$ $8^{h.}$	$19^{\circ}\ 46'\ 27''.5$ N.
Correction for $10^{m.}$ is	37.8
Moon's declination for January $21^{d.}$ $8^{h.}$ $10^{m.}$	19 45 49.7

The last page of the right ascensions and declinations contains the *Phases* of the Moon, and the dates of the Moon's *Perigee* and *Apogee*, or least and greatest distances from the earth.

The remaining six pages of the month are occupied by the *Lunar Distances*. They are given in the same manner as in the British *Nautical Almanac*, in order to conform to the rules of BOWDITCH's *Navigator*. These tables contain the geocentric distances of the centre of the moon from the sun, the larger planets, and certain fixed stars, at intervals of three hours, beginning with the noon of each day. All the distances that can be observed on the same day are grouped together under that date, and the letter E. or W. is affixed to the name of the star or planet, to indicate whether it is on the east or west side of the moon. The columns are read from the left to the right, across both pages of the same opening. The principle of determining the longitude by means of lunar distances consists in this: that they furnish the navigator with the means of comparing his own time, on board ship, with the time at the Greenwich Observatory. At the moment of observing a distance he notes the time by his own watch or chronometer, and by looking into the Ephemeris he discovers what o'clock it is at Greenwich when the moon and star are in the relative position with regard to each other which he has measured with his sextant. But it will very rarely occur that the navigator's *true distance*, that is, his observed distance cleared from the effects of refraction and lunar parallax, will be found in the Ephemeris. It will prove in most cases to be a quantity lying between two given distances. He is obliged, therefore, to take the difference between his own true distance and the one nearest to it in the pages of the Ephemeris, and to apply to the time standing over the latter a correction proportioned to this difference. This is a case of the simple rule of three. Owing, however, to the various denominations of space and time that enter into the question, it has been found convenient to lessen the labor of the operation by putting between every two successive distances given in the Ephemeris the proportional logarithm of their difference. This proportional logarithm is obtained by subtracting the logarithm of the difference of the two distances from the logarithm of three hours (both quantities being reduced to seconds), because three hours is the interval of time between two successive distances.

On the 5th of July, at midnight, of Greenwich mean time, the distance of the moon's centre from the planet Saturn, east of her, is 65° 40′ 58″, and at fifteen hours of the same date it is 64° 11′ 41″; the difference between the two distances is 1° 29′ 17″, or reduced to seconds, is 5357″, the logarithm of which, subtracted from the logarithm of three hours, or $10800^{s.}$, gives for the proportional logarithm of the difference between the two distances 3045, as it is in the column headed *P. L. of Diff.* If the calculated *true distance* of the navigator lie between the two given distances above mentioned, as, for instance, if it should be 64° 53′ 12″, the corresponding correction of the time would be found as follows:—

Distance in the Ephemeris at Midnight,		65° 40′ 58″
Calculated *True Distance,*		64 53 12
Difference,		0 47 46
Prop. log. in Ephemeris,	3045	
Prop. log. of Difference, 0° 47′ 46″	5761	
Prop. log. of $1^{h.}\ 36^{m.}\ 18^{s.}$	2716	

And this time is to be added to the time at the head of the column from which the distance of the Ephemeris was taken, which would make the time at Greenwich corresponding to the Navigator's True Distance $1^{h.}\ 36^{m.}\ 18^{s.}$ on the morning of the 6th of July.

This method of getting the Greenwich time between two given times in the Ephemeris rests upon the supposition, that the variation between one distance and the next following is uniform and regular. But owing to the inequalities in the moon's motion, this is not the case; and it is, in consequence of this, necessary to apply to the Greenwich time obtained by the preceding method a small correction.

This correction, due to the second differences in the moon's motion, is given in the Table on page 28 of the Appendix and is taken out and applied as follows.

The top of the Table is entered with the difference between that proportional logarithm of the Ephemeris which has already been used and the one next following, and the side of the Table is entered with the time which has been added to that at the head of the column of the Ephemeris, that is, the time given by the difference of the proportional logarithms at the close of the preceding paragraph; under the former, and opposite the latter, will be found the correction, in seconds of time, to be added to the time at Greenwich if the proportional logarithms are decreasing, but subtracted if they are increasing.

The Ephemeris of the Planets, from page 218 to page 241, consists of the apparent right ascension at Greenwich mean noon and its variation for one hour, the apparent declination at the same date and its variation for one hour, and the mean time of their meridian passage; and at the bottom of the page will be found the semidiameter and horizontal parallax for every fifth day of the month. The hourly variations belong to noon of the day on which they are given. The mode of correcting by means of the hourly variation for any time from noon has already been explained.

The Solar Coördinates for Greenwich mean noon, on pages 242 – 244, are added, and the Moon's Longitude and Latitude on pages 245 – 248.

Finally, the Mean Places of the one hundred principal Fixed Stars for January 1, 1864, are given on pages 256 – 258.

When the latitude is to be deduced from the meridian altitude of one of these stars, its time of passing the meridian can be ascertained by taking the sum of the right ascension of the star, and the mean time of sidereal noon contained in the last column of page III. of each month. The right ascension of the star is, in fact, its hour angle, or difference in time, from the sidereal noon, or 0$^{h.}$ If then a vessel in longitude 45° West should wish to obtain the latitude by a meridian observation of a star, as, for example, α TAURI (*Aldebaran*), on the evening of January 1, 1864, the process for obtaining the time of meridian passage would be as follows: —

	h.	m.	s.
Mean Time of sidereal 0$^{h.}$ January 1, 1864,	5	17	31
Correction for Longitude omitted.			
Right Ascension of α TAURI (*Aldebaran*),	4	28	7
Time of star's meridian passage,	9	45	38

The instant of passage might be more accurately determined by making an allowance for the difference between mean solar and sidereal time, and by applying the correction for longitude; but the above is sufficiently near for the purpose for which it is wanted, which is, to know the period of meridian passage approximately, in order to identify the star if necessary, and to be in time with the observation. The navigator will perceive that the dates in this column of page III. are astronomical, and will observe the distinctions of time explained in the first part of this article; he will also remember that when the sum exceeds 24 hours, 24 hours are to be subtracted, and a unit is to be added to the day of the month.

The Sun's Right Ascension may also be used for finding the time of meridian passage of a star, as shown in BOWDITCH'S *Navigator*, p. 223.

THE ASTRONOMICAL PART.

This part is adapted to the meridian of Washington.

Obliquity of the Ecliptic, &c., p. 250. — On this page are given the apparent obliquity, the equation of equinoxes in longitude and right ascension, the precession of equinoxes in longitude, and the sun's aberration and horizontal parallax, for every ten days of the year; at the bottom of the page will be found the mean obliquity for the beginning of the year, the precession for the middle of the year, the logarithm of the precession in a sidereal day, and the logarithm of the precession in a solar day. On the same page, the mean longitude of the moon's ascending node is also given for every ten days, and at the bottom of the page its daily motion.

Fixed Stars. — The Logarithms A, B, C, D, for correcting the places of the Fixed Stars, are given for the mean midnight of every day of the year, and the constants of reduction for every five days. To these tables are added Bessel's formulas of reduction, with Peters' coefficients, and the notation of the catalogue of stars of the British Association.

The *mean* places of 100 principal Fixed Stars on January 1, 1864; the *apparent* places of α and δ Ursæ Minoris, at the time of the upper transit at Washington, for every day of the year; and the *apparent* places of the remaining principal stars for every ten days; together with a table giving the correction of 51 Cephei, σ Octantis, and λ Ursæ Minoris, for terms of nutation involving 2 ☾, — complete the subject of the Fixed Stars.

Solar Ephemeris. — In the Solar Ephemeris, given for Washington mean and apparent noon, the hourly motions in right ascension and declination are the motions at the instant of noon. Only the seconds of right ascension and declination are given for apparent noon, the degrees and minutes being usually the same as for mean noon.

The *Moon Culminations* and *Moon-culminating Stars* are given in two distinct lists. The list of Moon Culminations contains both the solar and sidereal dates of transit; the apparent right ascension is the right ascension of the limb, and the declination is the declination of the centre, at their respective periods of culmination. The form of the lists of moon-culminating stars has been somewhat changed. In the first volume of the Ephemeris, reference to the stars to be used in connection with the Moon was made by a figure, and the stars themselves were entered successively in the order of numbers. In the present volume these figures are dispensed with, and the proper star to be observed in connection with the transit of the moon's limb is determined by means of the sidereal dates, common to both lists. Each star occupies a separate column containing its right ascension to hundredths of seconds for every sidereal date throughout the year for which it is available, and also its declination and magnitude. The first column of each page contains the sidereal date, and the last the daily change in right ascension of the corresponding stars. It is hoped that the standard observatories will determine the place of each one of these stars once at least in the course of the year. The whole list has been taken from the Twelve-Year Catalogue.

The *Ephemeris of the Moon*, which follows, and the *Moon's Phases*, require no special observation. In the moon's ephemeris, as in that of the sun, the hourly motions belong to the instant for which they are given.

The ephemeris of the two interior planets is given for mean noon and the time of transit: and that of the exterior planets is given for sidereal noon and the time of transit. The place of a planet for any number of minutes t, from the nearest noon for which it is given, t being negative when the time precedes the noon, may be computed by the formula,

$$\text{Planet's R. A. (or Dec.)} = A + B\,t + C\,t^2,$$

in which $A =$ R. A. (or Dec.) for the noon,
$B =$ the motion of R. A. (or Dec.) for 1 minute,
or, more exactly, $=$ the factor of t, as given in the Ephemeris;
$C =$ the factor of $t^2 =$ factor for second differences.

The *Solar Coördinates* are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator, at the beginning of the year. In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:).

The *Planetary Coördinates* are referred to the mean equinox and ecliptic of the mean noon of the 2400,000th day of the Julian Period, and the dates for which they are given are counted from this epoch in mean solar days. They may be converted into days of the Julian Period by adding 2400,000. The columns $-\frac{k^2}{r^3}x$, &c. contain the quantities $-1600\,m\frac{k^2}{r^3}x$, $-1600\,m\frac{k^2}{r^3}y$, $-1600\,m\frac{k^2}{r^3}z$, in units of the 7th decimal place, in which m denotes the mass of the planet, and k^2 the unit of attractive force in the solar system, or $\log k = 8.2355814$.

Eclipses.—The *Tables of Data* of the *Solar Eclipses* are adapted to very accurate computation by the following formulas.

Let $\phi =$ the latitude of the place,
$\lambda =$ its western longitude from Washington,

$$\begin{aligned}
\log e &= 8.9110835,\\
\log(1-e^2) &= 9.9971066,\\
\sin\phi' &= e\sin\phi,\\
h &= \sec\phi'\cos\phi,\\
k &= (1-e^2)\sec\phi'\sin\phi,\\
a &= A - h\sin(\mu-\lambda),\\
b &= B - E\,k + G\,h\cos(\mu-\lambda),\\
c &= -C + F\,k - H\,h\cos(\mu-\lambda),\\
m &= \sqrt{b\,c}.
\end{aligned}$$

If the instant for computation were correctly chosen at the time of beginning or end of the eclipse, m would be exactly equal to a. If m be not equal to a, the instant for a new computation, which will be an approximation to the actual time of beginning or end, may be found by adding to the preceding time of computation an interval t, which may be obtained in seconds by the formulas,

$$\begin{aligned}
\log\mu' &= 1.86167,\\
\tan\tfrac{1}{2}\psi &= \frac{c}{m} = \frac{m}{b},\\
a' &= A' - \mu'\,h\cos(\mu-\lambda),\\
b' &= B' - \mu'\,G\,h\sin(\mu-\lambda),\\
t &= \frac{1000000\,(m-a)}{a' + b'\cot\psi};
\end{aligned}$$

ψ must be taken of the same sign with a, and is a sufficiently near approximation to the angle of contact from the north towards the east. For the shadow of a total eclipse, ψ must be taken with a sign opposite that of a.

The magnitude of the eclipse is found by taking the difference (with regard to the signs) between the value of ψ at the beginning and its value at the end of the eclipse, and if this difference is denoted by $2\,\theta$, the number of digits eclipsed is

$$12\,(1+n)\sin^2\tfrac{1}{2}\theta, \qquad \text{or,}\ 12\,(1+n)\cos^2\tfrac{1}{2}\theta,$$

according as θ is acute or obtuse; n is the ratio of the semidiameter of the moon to that of the sun.

The value of θ may also be obtained by the formulas

$$\tan\chi = \frac{b'}{a'}, \qquad \theta = \psi + \chi,$$

(in which χ has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \,.\, \frac{m-a}{a'} \,.\, \frac{\cos\chi \sin\psi}{\sin\theta}\,.$$

The following is an example of the computation of the beginning of the Eclipse of October 29 – 30 for the Observatory at Santiago.

For Santiago Observatory, $\phi = -33^\circ\ 26'\ 24''.8$ $\qquad$ $\lambda = 353^\circ\ 31'\ 55''.5$

$\log\sin\phi = 9.7412042\,n$ $\qquad$ $\log\cos\phi = 9.9214062$

$\log\sin\phi' = 8.6522877\,n$ $\qquad$ $\log\sec\phi' = 0.0004383$

$\log k = 9.7387491\,n$ $\qquad$ $\log h = 9.9218445$

A first approximation may be made from the chart, and corrected by a computation like the following. In this way we obtain 20^h 37^m Washington mean time as a near approximation to the time of the beginning of the eclipse at Santiago. For a nearer approximation, take from the table (p. 404) for 20^h 37^m

$A = -\ 0.92688$ $\qquad$ $\log E = 9.986401$

$B = +\ 0.59607$ $\qquad$ $\log F = 9.987422$

$C = -\ 0.53341$ $\qquad$ $\log G = 9.391679\,n$

$A' = +140.58$ $\qquad$ $\log H = 9.375252\,n$

$B' = -\ 33.20$ $\qquad$ $\mu = 313^\circ\ 18'\ 38''.3$

Hence $\qquad \mu - \lambda = 319^\circ\ 46'\ 42''.8$

$\log\cos(\mu-\lambda) = 9.882840$ $\qquad$ $\log\sin(\mu-\lambda) = 9.810060\,n$

$\log[h\cos(\mu-\lambda)] = 9.804684$ $\qquad$ $\log[h\sin(\mu-\lambda)] = 9.731905\,n$

$\log[Gh\cos(\mu-\lambda)] = 9.196363\,n$ $\qquad$ $\log[Hh\cos(\mu-\lambda)] = 9.179936\,n$

$\log(Ek) = 9.725150\,n$ $\qquad$ $\log(Fk) = 9.726171\,n$

$Gh\cos(\mu-\lambda) = -0.15717$ $\qquad$ $-Hh\cos(\mu-\lambda) = +\ 0.15133$

$-Ek = +0.53107$ $\qquad$ $Fk = -\ 0.53232$

$B = +0.59607$ $\qquad$ $-C = +\ 0.53341$

$b = +0.96997$ $\qquad$ $c = +\ 0.15242$

$\log b = 9.986758$ $\qquad$ $-h\sin(\mu-\lambda) = +\ 0.53939$

$\log c = 9.183042$ $\qquad$ $A = -\ 0.92688$

$\log m = 9.584900$ $\qquad$ $a = -\ 0.38749$

$\log\tan\frac{1}{2}\psi = 9.598142$ $\qquad$ $m = -\ 0.38450$

$\psi = -\ 43^\circ\ 15'$ $\qquad$ $m - a = +\ 0.00299$

$\log[\mu' h\cos(\mu-\lambda)] = 1.66635$ $\qquad$ $\log[G\mu' h\sin(\mu-\lambda)] = 0.98525$

$-\mu' h\cos(\mu-\lambda) = -\ 46.38$ $\qquad$ $-G\mu' h\sin(\mu-\lambda) = -\ 9.67$

$a' = +\ 94.20$ $\qquad$ $b' = -42.87$

$a' + b'\cot\psi = +139.77$ $\qquad$ $\log b' = 1.63215\,n$

$\log[10^6(m-a)] = 3.4757$ $\qquad$ $\log\cot\psi = 0.02655\,n$

$\log(a' + b'\cot\psi) = 2.1454$ $\qquad$ $b'\cot\psi = +45.57$

$\log t = 1.3303$ $\qquad$ $t = +21.39$

	h	m	s
Approximate time	20	37	0.00
t, the correction			+21.39
Washington mean time of beginning	20	37	21.39
Santiago mean time of beginning	21	3	13.69

Occultations.—The pages 407 to 437 inclusive are taken up with *Elements for Facilitating the Calculation of Occultations of Planets and Stars by the Moon.* These elements are given for all the stars to the fifth, and for some of the sixth magnitude, inclusive, contained in the British Association Catalogue, which can be occulted by the moon during the year 1864.

The several columns of these pages contain, —1. the date; 2. the star's name; 3. the star's magnitude; 4. the limiting parallels of visibility; 5. Washington mean time of the moon's true conjunction with the star in right ascension; 6. Washington hour angle, in time, of the star at the time of true conjunction; 7. coördinate q at the time of true conjunction, 8. hourly variation p' of coördinate p; 9. hourly variation q' of coördinate q; 10. logarithmic sine of the star's declination; 11. logarithmic cosine of the star's declination.

Designating the time of true conjunction by the usual symbol, ☌, we have, at this time, $T =$ ☌, $h = H$, $p = 0$, and $q = Y$. For any other time during the occultation, we shall have $T =$ ☌ $+ (t)$, $h = H +$ sidereal equivalent of (t), $p = (t)\, p'$, and $q = Y + (t)\, q'$. The other elements are considered as constant for the occultation.

In the prediction of an occultation for a particular place, the principal objects of determination are, the instant of *immersion*, or of the star's disappearance behind the moon's limb; of *emersion*, or of the star's reappearance; and the points on the moon's border where these appearances take place.

The calculations are made according to the method of Bessel, whose original paper on the subject may be found in Schumacher's *Astronomische Nachrichten*, Vol. VII. p. 1; also in the *Berliner Astronomisches Jahrbuch* for 1831, p. 257. The letters and numerals prefixed to the stars belonging to the group of the Pleiades, and the magnitudes of these stars, are taken from No. V. of Bessel's *Astronomische Untersuchungen.*

The process of computation is shown by the following equations:—

d = Longitude for Washington, of the place, + West, — East

ϕ = Geographical North Latitude of the place.

ϕ' = Geocentric North Latitude of the place.

r = Earth's radius at the place, or the distance of the observer's position from the earth's centre.

It is unnecessary to calculate ϕ' and r separately, as we have

$$r \sin \phi' = \frac{(1 - e^2) \sin \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}} \qquad r \cos \phi' = \frac{\cos \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}}$$

in which e denotes the eccentricity of the earth's meridians.

The logarithms of $\frac{1 - e^2}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log A$, and of $\frac{1}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log B$, derived from $e = .081697$, according to the latest determination of Bessel, may be taken from the following table, where the geographical latitude of the place is the argument.

ϕ	Log. A	Log. B
0	9.9971	0.0000
10	9.9971	0.0000
20	9.9973	0.0002
30	9.9975	0.0004
40	9.9977	0.0006
50	9.9979	0.0009
60	9.9982	0.0011
70	9.9984	0.0013

$$r \sin \phi' = A \sin \phi$$
$$r \cos \phi' = B \cos \phi$$

$$a = r \cos \phi' \sin (h - d)$$
$$b = r \cos \phi' \cos (h - d)$$

$$\log \lambda = 9.4192$$

$$u = a \qquad\qquad u' = b\lambda$$
$$v = r \sin \phi' \cos D - b \sin D \qquad\qquad v' = a\lambda \sin D$$

$$m \sin M = p - u \qquad\qquad n \sin N = p' - u'$$
$$m \cos M = q - v \qquad\qquad n \cos N = q' - v'$$

$$\log k = 9.4350$$

$$\cos \psi = \frac{m \sin (M - N)}{k}$$

$$Q = 90^\circ - N \mp \psi$$

$$t = -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n}$$

Upper signs for Immersion; under signs for Emersion.

$$c \sin C = u + t u'$$
$$c \cos C = v + t v'$$

$$V = Q + C$$

Mean solar time of the star's apparent contact with the moon's limb

$$= T - d + t$$

Angle from *North Point* $= Q$
Angle from *Vertex* $= V$

The angle ψ is to be taken out positive and less than 180°. If $\log m \sin (M - N)$ be greater than $\log k$, $\cos \psi$ will evidently be greater than 1, or impossible, and there will be no occultation, except in some rare instances where the moon's limb passes very close to the star, when $\log \cos \psi$ will result very near 0. In these cases, a recalculation should be made according to the method which follows, using

$$t = -\frac{m}{n} \cos (M - N),$$

which may give $\log m \sin (M - N)$ less than $\log k$, when the star will be occulted. On the other hand, it may happen that, in these cases of very near approach, a first determination may give a $\cos \psi$ less than 1, which a recalculation will show to be impossible. The angle ψ is then to be considered $= 0^\circ$ when $m \sin (M - N)$ is positive, and we shall have $Q = 90^\circ - N$. When $m \sin (M - N)$ is negative, $\psi = 180^\circ$, or $Q = 90^\circ - N + 180^\circ, = 270^\circ - N$. We shall also have, at the time of nearest approach,

$$\text{star's distance from moon's limb} = \pi \left(m \sin (M - N) - .2723\right),$$

in which π is the moon's horizontal parallax.

By *Angle from North Point* is to be understood the arc included between the star when in contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the North Pole; and by *Angle from Vertex*, the arc between the star at contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the zenith. These angles are reckoned from the north point and from the vertex towards the *West* round the circumference of the moon's disc. For the image as seen in an inverting telescope, add to them 180°.

The results obtained by the above equations are only approximate, yet the computed times of immersion and emersion will usually be within one or two minutes of the truth. The error generally increases with the star's distance from the apparent path of the moon's centre and may, in some cases, amount to several minutes. For an immersion, this error is not of much consequence; but for an emersion, especially of a small star, the time should be determined with greater precision. For this purpose u' and v' must be computed with

$$h' - d = h - d + \tfrac{1}{2}\mu,$$

μ being the symbol by which we express the sidereal equivalent of t in these equations.

$$u' = r \cos \phi' \lambda \cos (h' - d)$$
$$v' = r \cos \phi' \lambda \sin (h' - d) \sin \mathrm{D}.$$

Then with these values of u' and v', recompute N, n, ψ, and t, by means of

$$n \sin N = p' - u'$$
$$n \cos N = q' - v'$$
$$\cos \psi = \frac{m \sin (M - N)}{k}$$
$$t = -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n}$$

using the M and m obtained by the first computation, and we shall have the time of contact $T - d + t$, generally within a few seconds of the truth.

As a check on the accuracy of the work, we might compute

$$u = r \cos \phi' \sin (h - d + \mu)$$
$$v = r \sin \phi' \cos D - r \cos \phi' \sin D \cos (h - d + \mu)$$

and we should have

$$(p + t\,p' - u)^2 + (q + t\,q' - v)^2 = k^2 = 0.0741.$$

But if $m \sin M$, $m \cos M$, $\log n \sin N$, and $\log n \cos N$, have been corrrectly computed, we shall have the following shorter and more convenient check on the subsequent calculations for the time of contact:

$$(m \sin M + t\, n \sin N)^2 + (m \cos M + t\, n \cos N)^2 = k^2 = 0.0741.$$

The elements of computation, H, Y, etc., are given for the instant of the moon's true conjunction with the star in right ascension. It is desirable, however, in computing an occultation for a particular place, to assume a time for the calculation near to the time of the nearest approach of the moon's centre to the star, as seen at that place, and to reduce the elements to this assumed time. This time, for which the nearest tenth of an hour will be sufficiently accurate, will not differ greatly from the time of *apparent* conjunction, as affected by parallax, which may be determined approximately by the following equations. Let $T - d$ be the time of apparent conjunction; then

$$(t) = \frac{\sin (H - d)}{p' \sec \phi - [9.4027] \cos (H - d)}$$
$$T - d = \delta - d + (t).$$

The elements corresponding to the time $T - d$ may then be obtained as follows.

$$h - d = H - d + (\mu)$$
$$p = (t)\, p'$$
$$q = Y + (t)\, q'$$

Where occultations are to be generally observed, as at astronomical stations, either temporary or permanent, the observer will find an advantage in looking over the list and selecting, beforehand, all those which may be visible at his station, by observing if his latitude be included between the *limiting parallels* for any given occultation, if the time ($T - d$) be favorable as regards the absence of daylight, and if the star's hour-angle ($h - d$) be not greater than its semidiurnal arc for the given latitude.

For obtaining the time

$$T - d = \delta - d + (t),$$

it will be well to tabulate the values of

$$(t) = \frac{\sin (H - a)}{p' \sec \phi - [9.4027] \cos (H - d)}$$

for every half-hour of ($H - d$) as far as the greatest semidiurnal arc computed for the latitude of the station with a declination of 30°; and for all values of p', using two decimal figures, from 0.50 to 0.60.

It will also be found advantageous to have tabulated values of

$$u = r \cos \phi' \sin (h - d)$$
$$u' = r \cos \phi' \lambda \cos (h - d)$$

which should be given for every minute (in time) of ($h - d$), from $0^{h.}$ to $6^{h.}$. If ($h - d$) exceeds $6^{h.}$, the argument will be $12^{h.} - (h - d)$, instead of ($h - d$). It will be seen by the equations that u will have the same sign as $\sin (h - d)$, and that u' will have the same sign as $\cos (h - d)$.

In the equation

$$v = r \sin \phi' \cos D - b \sin D$$

the term $r \sin \phi' \cos D$ may be tabulated for every tenth minute of declination, from 0° to 30°.

For a practical application of the preceding formulas, we will make the calculations for an occultation of the star 60 Cancri, March 18, 1864, as it will appear at Cambridge, Mass., in north latitude $42° \; 22'.8 = \phi$, and east longitude from Washington $0^{h} \; 23^{m} \; 41^{s} = d$. The data for computation are given on page 413, and, with the latitude and longitude of the place, are as follows: —

March 18. 60 Cancri, 6.

ϕ	$+42° \; 22'.8$	H	$+0^{h} \; 26^{m} \; 7^{s}$	p'	0.5241
d	$-\;0^{h} \; 23^{m}.7$	d	$-0 \; 23 \; 41$	q'	-0.1536
δ	9 27.0	$H - d$	$+0 \; 49 \; 48$	log sin D	+9.3228
$\delta - d$	9 50.7	Y	+ .5126	log cos D	9.9902

Calculation of the Time, $T - d$, and reduction of the elements of computation.

	log p'	+9.719
	log sec ϕ	+0.132
log $p' \sec \phi$ =	log (1)	+9.851
	log constant	9.403
	log cos ($H - d$)	+9.990
log [9.403] cos ($H - d$) =	log (2)	+9.393
	(2)	+ .247
	(1)	+ .710
(1) − (2) =	(3)	+ .463
	log (3)	+9.666
	log sin ($H - d$)	+9.334
$\log \frac{\sin (H - d)}{(3)} =$	log (t)	+9.668

	(t) +	$0^{h}.46$
(Reduced to hours and minutes)	(t) +	$0^{h} \; 27^{m} \; 36^{s}$
Sidereal equivalent for (t)	(μ) +	0 27 41
	$H - d$ +	0 49 48
$H - d + (\mu) =$	$h - d$ +	1 17 29
	$\delta - d$	9 50.7
$\delta - d + (t) =$	$T - d$	10 18.3
$(t) \, p' = 0.46 \times 0.5241 =$	p +	.2411
	Y +	.5126
$(t) \, q' = -0.1356 \times 0.46 =$	$(t) \, q'$ −	.0707
$Y + (t) \, q' =$	q +	.4419

Calculation of the times of *Immersion* and *Emersion*, and of the *Angles of Position* of the star and moon.

(Table, page 495, Arg. ϕ)	$\log A$	9.9977
	$\log \sin \phi$	+9.8287
$\log A \sin \phi =$	$\log r \sin \phi'$	+9.8264
	$\log \cos D$	+9.9902
	$\log r \sin \phi' \cos D$	+9.8166
(Table, page 495, Arg. ϕ)	$\log B$	0.0007
	$\log \cos \phi$	+9.8684
$\log B \cos \phi =$	$\log r \cos \phi'$	+9.8691
	$\log \sin (h - d)$	+9.5207
$\log r \cos \phi' \sin (h - d) = \log u =$	$\log a$	+9.3898
	$\log \cos (h - d)$	+9.9747
$\log r \cos \phi' \cos (h - d) =$	$\log b$	+9.8438
	$\log \lambda$	9.4192
	$\log a \lambda$	+8.8090
	$\log \sin D$	+9.3228
	$\log b \sin D$	+9.1666
$\log a \lambda \sin D =$	$\log v'$	+8.1318
$\log b \lambda =$	$\log u'$	+9.2630
	$r \sin \phi' \cos D$	+ .6555
	$b \sin D$	+ .1468
$r \sin \phi' \cos D - b \sin D =$	v	+ .5087
	q	+ .4419
$q - v =$	$m \cos M$	− .0668
	p	+ .2411
	u	+ .2454
$p - u =$	$m \sin M$	− .0043
	q'	− .1536
	v'	+ .0135
$q' - v' =$	$n \cos N$	− .1671
	p'	+ .5241
	u'	+ .1832
$p' - u' =$	$n \sin N$	+ .3409
	M	183° 41′
	N	116 7
	$M - N$	67 34
	$90° - N$	333 53
	ψ	76 52
For Immersion, $90° - N - \psi =$	Q	257 1

	$\log m \sin M$	−7.6335
	$\log m \cos M$	−8.8248
	$\log \tan M$	+8.8087
	$\log \cos M$	−9.9991
	$\log m$	+8.8257
	$\log n \sin N$	+9.5326
	$\log n \cos N$	−9.2230
	$\log \tan N$	−0.3096
	$\log \sin N$	+9.9532
	$\log n$	+9.5794
	$-\log \frac{m}{n}$	−9.2463
	$\log \cos (M - N)$	+9.5816
$-\log \frac{m}{n} \cos (M - N) =$	(1)	−8.8279
	$\log \sin (M - N)$	+9.9658
	$\log m \sin (M - N)$	+8.7915
	$\log k$	9.4350
$\log \frac{m \sin (M - N)}{k} =$	$\log \cos \psi$	+9.3565
	$\log \sin \psi$	+9.9885
	$\log k \sin \psi$	+9.4235
$\log \frac{k \sin \psi}{n} =$	$\log (2)$	+9.8441
	(1)	− .0673
	(2)	+ .6984
For Immersion, (1) — (2) =	t_1	− .7657
For Emersion, (1) + (2) =	t_2	+ .6311
	$\log t_1$	−9.8840
	$\log u'$	+9.2630
	$\log t_1 u'$	−9.1470
	$\log v'$	+8.1318
	$\log t_1 v'$	−8.0158
	$t_1 v'$	− .0104
	v	+ .5087
$v + t_1 v' =$	$c \cos C$	+ .4983
	$t_1 u'$	− .1403
	u	+ .2454
$u + t_1 u' =$	$c \sin C$	+ .1051
	$\log c \sin C$	+9.0216
	$\log c \cos C$	+9.6975
	$\log \tan C$	+9.3241

		h m
	$T - d$	10 18.3
(Reduced to hours and minutes,)	t_1 —	45.9
Immersion: *Cambridge Mean Time*, ...	$T - d + t_1$	9 32.4
		° ′
	C +	11 55
Immersion *Angle from North Point* = ...	Q	257 1
Immersion *Angle from Vertex* = $Q + C$ = ...	V	268 56
		h m
(Reduced to hours and minutes,)	t_2 +	0 37.9
Emersion: *Cambridge Mean Time*, ...	$T - d + t_2$	10 56.2

Calculation of a more accurate time, etc., of *Emersion.*

		h m s
	$h-d$	+1 17 29
Sidereal equiv. for $\frac{1}{2}t_2 =$	$\frac{1}{2}\mu_2$	+ 18 59
$h-d+\frac{1}{2}\mu_2 =$	$h'-d$	+1 36 28
	$\log\cos(h'-d)$	+9.9603
	$\log r\cos\phi'$	+9.8691
	$\log\lambda$	9.4192
$\log r\cos\phi'\lambda\cos(h'-d) =$	$\log u'$	+9.2486
	$\log\sin(h'-d)$	+9.6113
	$\log r\cos\phi'\lambda$	+9.2883
	$\log\sin D$	+9.3228
$\log r\cos\phi'\lambda\sin(h'-d)\sin D =$	$\log v'$	+8.2224
	v'	+ .0167
	q'	— .1536
$q'-v' =$	$n\cos N$	— .1703
	u'	+ .1773
	p'	+ .5241
$p'-u' =$	$n\sin N$	+ .3468
	$\log n\sin N$	+9.5401
	$\log n\cos N$	—9.2312
	$\log\tan N$	—0.3089
	$\log\sin N$	+9.9531
	$\log n$	+9.5870
From first determination,	$\log m$	+8.8257
	$-\log\frac{m}{n}$	—9.2387
	$\log\cos(M-N)$	+9.5822
	$\log\sin(M-N)$	+9.9657
	$\log m\sin(M-N)$	+8.7914
	$\log k$	9.4350
$\log\frac{m\sin(M-N)}{k} =$	$\log\cos\psi$	+9.3564
	$\log\sin\psi$	+9.9885
	$\log k\sin\psi$	+9.4235
$\log\frac{k\sin\psi}{n} =$	$\log(2)$	+9.8365
$-\log\frac{m}{n}\cos(M-N) =$	$\log(1)$	—8.8209

		° ′
From first determination,	M	183 41
	N	116 9
	$M-N$	67 32
	$90^\circ-N$	333 51
	ψ	76 52
For Emersion, $90^\circ-N+\psi =$	Q	50 43
	(1)	— .0662
	(2)	+ .6863
(1) + (2) =	t	+ .6201
	$\log t$	+9.7925
	$\log n\sin N$	+9.5401
	$\log n t\sin N$	+9.3326
	$\log n\cos N$	—9.2312
	$\log n t\cos N$	—9.0237
	$n t\cos N$	— .1056
From first determination,	$m\cos M$	— .0668
$m\cos M+n t\cos N =$	(3)	.1724
	$n t\sin N$	+ .2151
From first determination,	$m\sin M$	— .0043
$m\sin M+n t\sin N =$	(4)	.2108
	$(4)^2$	.0444
	$(3)^2$	.0298
$(3)^2+(4)^2=k^2=0.0741,$	Check	.0742
	$\log u'$	+9.2486
	$\log t u'$	+9.0411
	$\log v'$	+8.2224
	$\log t v'$	+8.0149
	$t v'$	+ .0103
From first determination,	v	+ .5087
$v+t v' =$	$c\cos C$	+ .5190
	$t u'$	+ .1099
From first determination,	u	+ .2454
$u+t u' =$	$c\sin C$	+ .3553
	$\log c\sin C$	+9.5506
	$\log c\cos C$	+9.7152
	$\log\tan C$	+9.8354

		h m
	$T-d$	10 18.3
(Reduced to hours and minutes,)	t	+ 37.2
EMERSION: *Cambridge Mean Time*, ...	$T-d+t$	10 55.5

		° ′
	C	+ 34 24
Emersion *Angle from North Point*, = ...	Q	50 43
Emersion *Angle from Vertex* = $Q+C$ = ...	V	85 7

The last two pages of the Occultations contain a list of such Occultations as will be visible at Washington during the year 1864.

The Tables of *Jupiter's Satellites* embrace, —

A list of the occultations, eclipses, transits, and transits of shadows, in the order of the time of the occurrence of the phenomena for the satellites taken promiscuously. They are given for every month, accompanied with a diagram, constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipses for an inverting telescope.

A table containing the mean time of the geocentric superior conjunction, and the rectangular coördinates of the satellites corresponding to the time from the next preceding superior conjunction, at intervals of twenty minutes for the first satellite, of forty minutes for the second, of one hour and twenty minutes for the third, and of three hours for the fourth satellite. They are also given for the time of eclipse for the first, second, and third satellites at intervals of seven days, and for the fourth for every eclipse. They enable the astronomer to obtain the configurations at all times. They are given in seconds of arc.

The coördinates have their origin in the centre of the primary, and are referred to the major and minor axes of the apparent ellipse described by the path of the satellite.

The major axis of this ellipse is constant, for the earth's mean place; but the minor axis takes all values from the positive and negative maxima to zero, owing to the changes in the earth's elevation above the plane of the satellite's orbit.

The values in the table correspond to the maximum value of the conjugate axis, as seen from the sun or that of the mean maximum for the earth (which is a constant value). Factors are given in an adjoining column, at intervals of seven days for the first, second, and third satellites, and seventeen days for the fourth, to reduce the above values to those corresponding to the axis for the time being; also for the same intervals, the angle of inclination of the northern semi-minor axis to the circle of declination.

x is positive after superior conjunction, or on the east side of the planet, negative before superior conjunction, or on the west side. y will be positive north, negative south. The eclipses, occultations, &c. of the satellites, visible at Washington, that is, those which occur when the sun is 8° below and Jupiter 8° above the horizon, are distinguished by a W. placed after the name of the phase.

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1864.

The Precession of the Equinoxes adopted in this volume is taken from Struve and Peters;[*] it is,

$$\text{Precession} = 50''.2411 + 0''.0002268\, t,$$

in which t is the number of years after 1800.

The Mean Obliquity of the Ecliptic is also taken from Struve and Peters, and its value is,[†]

$$\text{Obliquity} = 23^\circ\ 27'\ 54''.22 - 0''.4645\, t - 0''.0000014\, t^2.$$

The constant of aberration is that of Struve, and is,[‡]

$$\text{Aberration} = 20''.4451 \pm 0''.0111.$$

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from Peters' formulas given in his *Numerus Constans Nutationis.*[§] These formulas are reprinted in the volume of this ephemeris for 1855.

Of the Mean Places of 100 Fixed Stars, thirty-three have been taken from Le Verrier's list of Fundamental Stars, *Annales de l'Observatoire Impériale de Paris*, Vol. II.; nine from a list of Circumpolar Stars prepared by Dr. Gould, *U. S. Coast Survey Report*, 1855; and the remainder from the list of stars in the *English Nautical Almanac* for 1855, combined with that given in the *Astronomical Observations made during the Year* 1846 *at the National Observatory*, *Washington.*

The Apparent Places of the Fixed Stars have been obtained by means of Peters' formulas, which are given on page 255.

The place of Sirius is corrected by the following formula, given by Peters, for the variability of its motion in right ascension compared with those of β Orionis, α Orionis, and Procyon.

$$\text{Variation of right ascension} = 0^s.101 + 0^s.00072\, t + 0^s.170 \text{ sin. } (u + 92^\circ\ 18');$$

in which

---

[*] Peters' *Numerus Constans Nutationis*, p. 71.

[†] Ibid., pp. 66 and 71.

[‡] Struve's *Constant de l'Aberration*, p. 47.

[§] Peters' *Numerus Constans Nutationis*, pp. 46–48.

APPENDIX.

u = the eccentric anomaly from the inferior apsis. It is found from the elements,

Mean annual motion of Sirius in its orbit	$= 7°.3104$	$\pm\ 0°.2162$
Period of its revolution	$= 49^{y}.245$	$\pm\ 1^{y}.456$
Passage through the inferior apsis	$= 1792.819$	$\pm\ 2^{y}.039$
Eccentricity	$= 0.5647$	$\pm\ 0.0827$

The List of Moon-Culminating Stars is large, and so arranged in a systematic form as to permit the observer a great range for selection.

The Ephemeris of the Sun is constructed from the Tables of Hansen and Olufsen, Copenhagen, 1853. In the Computation of the Sun's Geocentric Coördinates, regard has been had to the Sun's latitude; the computation has been made by means of the formulas given in the *Construction of the Almanac for* 1855.

Encke's discussion of the Transits of Venus in 1761 and 1769, in his *Der Venusdurchgang von* 1769, &c., has furnished the standard

Equatorial Horizontal Parallax at the Earth's Mean Distance $= 8''.5776$.

The Sun's Semidiameter at the Earth's Mean Distance has been taken equal to 16′ 2″.

For reducing observations of different observers, the following corrections may be added:—

For Greenwich Mural Circle,	H.	+ 0″.21
" " " "	H. B.	— 0.43
" " " "	F.	— 0.86
" " " "	E.	+ 0.17
" " " "	R.	— 0.57
" " " "	G.	— 0.18
" " " "	I. H.	— 0.87
" " " "	D.	— 0.61
" " " "	W. R.	+ 0.49
" " " "	P.	— 1.28
Königsberg Meridian Circle,	Bessel	— 1.10
Dorpat " "	W. Struve	— 1.36
Washington Mural Circle,	Prof. Coffin	+ 1.00
" " "	Lieut. Page	+ 1.00
Washington Meridian Circle,	Prof. Hubbard	— 0.41

The Ephemeris of the Moon has been constructed from Peirce's *Tables of the Moon*, with the *Tables of the Moon's Parallax*, constructed from Walker's and Adams's formulas, and arranged as a Supplement to the first edition of Peirce's *Tables of the Moon*.

The Semidiameter of the Moon at the Earth's Mean Distance is taken to be $\frac{1}{100}$ part greater than that given by Burckhardt, although that given by Burckhardt is probably better adapted to the computation of eclipses and occultations.

CONSTRUCTION OF THE ALMANAC.

The Ephemeris of Mercury has been constructed from the theory of Le Verrier, published in the *Additions* to the *Connaissance des Temps* for 1848, without any alteration. Tables have been computed from Le Verrier's formulas for this purpose.

The Ephemeris of Venus has been derived from manuscript Tables, constructed from Lindenau's Tables, in a form similar to that adopted for the Lunar Tables; applying Airy's Long Equation and the corrections proceeding from the discussion, by the method of Least Squares, of Mr. Hugh Breen's results contained in his paper on the *Corrections of* Lindenau's *Elements of the Orbit of Venus*, &c., published in the *Memoirs of the Royal Astronomical Society*, Vol. XVIII.; and adopting the secular variations of the elements from Le Verrier's *Memoir on the Determination of the Secular Inequalities of the Planets*, which appeared in the *Connaissance des Temps* for the year 1844. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0.

$$\begin{aligned}
L &= 289^\circ\ 51'\ 53''.5 \\
\pi &= 129\ 32\ 59.6 + 49''.57459\,t. \\
\Omega &= 75\ 23\ 27.3 + 32.88424\,t. \\
i &= 3\ 23\ 34.6 + 0.04363\,t. \\
e &= 1410''.6847 - 0.11157\,t. \\
n &= 2106641.438 \\
a &= 0.7233323
\end{aligned}$$

The Ephemeris of Mars is derived from manuscript Tables constructed from Lindenau's Tables in the same manner as the Tables of Venus. Mr. Hugh Breen's results contained in his paper *On the Corrections of* Lindenau's *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and Le Verrier's secular variations of the elements are likewise adopted. The following are the corresponding corrected elements, and secular variations for Washington, 1855.0,

$$\begin{aligned}
L &= 320^\circ\ 13'\ 33''.71 \\
\pi &= 333\ 23\ 17.80 + 65''.99145\,t. \\
\Omega &= 48\ 25\ 55.18 + 27.68294\,t. \\
i &= 1\ 51\ 2.20 - 0.02141\,t. \\
e &= 19238''.75 + 0.18549\,t. \\
n &= 689050\ 9023 \\
a &= 1.5236878
\end{aligned}$$

The Ephemeris of Jupiter is derived from manuscript Tables constructed from Bouvard's Tables, with such changes as were required to make them correspond more nearly to the formulas.

The Ephemeris of Saturn is also derived from manuscript Tables constructed from the Tables of Bouvard, with changes having the same object. The mass of Jupiter given by Bessel has been adopted and used.

This mass $= \dfrac{1}{1047.879 \pm 0.235}$ of the sun's mass

The following corrections of the elements have also been introduced for 1864 :—

corr. mean long. = +4″.9
corr. long. of node = —143″.4
corr. inclination = —5″.7.

The Ephemeris of Uranus is derived from the elliptical portion of **Bouvard**'s Tables, with **Le Verrier**'s corrections and perturbations caused by Jupiter and Saturn, contained in his *Recherches sur les Mouvements de la Planète Herschel* (*dite Uranus*), *published in the Connaissance des Temps* for 1849, and also **Peirce**'s corrections and perturbations arising from the influence of Neptune,

The combined corrections of the elements deduced by **Peirce** for January 1, 1800, are as follows: —

corr. mean distance = +0.000942
corr. mean motion = —1.″13560
corr. eccentricity = —0.0003626
corr. long. of per. = +8252″.4
corr. long. of epoch = +2575.″4.

The Ephemeris of Neptune is derived from **Peirce**'s theory and **Walker**'s orbit.

The eclipses and elongations of Jupiter's Satellites are computed from **Damoiseau**'s Tables.

The vertical semidiameters of the Planets are computed from the following values: —

	Vertical Semidiameter.	Log. Dist.	Authority
Mercury	3″.34	0.00	**Le Verrier**, *Theory of Mercury.*
Venus	8.546 ± 0.086	0.00	**Peirce**, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars	2.842 ± 0.057	0.25	
Jupiter	18.78 ± 0.067	0.70	
Saturn	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0 3	1.30	

To correspond to the apparent semidiameters observed with the Washington mural circle, all the semidiameters, except those of Mercury, computed from these values, must be increased by a constant quantity = 0″.57.

The apparent elements of Saturn's Rings are computed from **Bessel**'s data, except those for **Bond**'s dusky ring.

The elements of the eclipse are adapted to the neat and simple modification of **Bessel**'s formulas, suggested by T. **Henry Safford**, Jr.

The elements adapted to **Bessel**'s formulas are given for all occultations of stars greater than those of the sixth magnitude

The Heliocentric Coördinates of the Planets are given for the computation of perturbations, and the following are the values of the masses, that of the Sun being unity: —

Mercury	$\frac{1}{4865751}$	**Encke**, *A. N.*, No. 443.
Venus	$\frac{1}{390000}$	**Le Verrier**, *Théor. de Merc.*, p. 115

CONSTRUCTION OF THE ALMANAC.

The Earth	$\frac{1}{354936}$	Le Verrier, *Théor. de Merc.*, p. 26.
Mars	$\frac{1}{2680637}$	Burckhardt, *Conn. des Temps*, 1816, p. 343.
Jupiter	$\frac{1}{1047.879 \pm 0.235}$	Bessel, *Die Masse des Jupiter*, p. 64
Saturn	$\frac{1}{3501.6}$	Bessel, *Comptes Rendus*, 1841.
Uranus	$\frac{1}{24905}$	Lamont, *Mem. Ast. Soc.*, Vol. XI. p. 54.
Neptune	$\frac{1}{18780}$	Peirce, *Am. Ac. Proc.*, Vol. I. p. 333.

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the electrotype plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

The principal computations of the Ephemeris have been distributed in the following manner.

The Sun has been computed by Mr. Eastwood; the Ephemeris of the Moon, by Mr. Wright, Mr. Ferrel, Mr. Oliver, and Professor Newcomb; the Moon Culminations, by Mr. Loomis; and the Lunar Distances, by Mr. Wright and Professor Newcomb. Mercury has been computed by Mr. Bradford and Mr. Hill, Venus by Miss Mitchell, Mars by Mr. Eastwood, Jupiter by Professor Kendall, Saturn by Professor Van Vleck, Uranus by Mr. Ferrel, and Neptune by Professor Kendall. The Fixed Stars and the General Constants for Reduction have been computed by Mr. Sprague, and the Occultations by Mr. Downes. The Eclipses have been computed and the Charts projected by Mr. Wright. The Table of Geographical Positions of the Principal Observatories has been prepared by Dr. Gould.

EQUATOR TO ECLIPTIC.

TABLE FOR CHANGING LATITUDE AND LONGITUDE TO RIGHT ASCENSION AND DECLINATION, OR THE REVERSE.

k	*k*	*A*	*a*	Diff.	Log. *a*	Diff.	*b*	Log. *b*	*B*	Diff.	*k*	*k*
°	h. m	° ′		+					° ′		h. m.	°
0	0 0	0 0.0	0.3981	1	9.6000	1	0.9173	9.9625	0 0.0	26.0	12 0	180
1	0 4	0 5.4	0.3980	2	9.5999	2	0.9174	9.9626	0 26.0	26.1	11 56	179
2	0 8	0 10.8	0.3978	3	9.5997	3	0.9175	9.9626	0 52.1	26.0	11 52	178
3	0 12	0 16.2	0.3975	4	9.5994	5	0.9176	9.9627	1 18.1	25.9	11 48	177
4	0 16	0 21.5	0.3971	5	9.5989	6	0.9178	9.9627	1 44.0	25.9	11 44	176
5	0 20	0 26.9	0.3966	7	9.5983	7	0.9180	9.9628	2 9.9	25.9	11 40	175
6	0 24	0 32.2	0.3959	8	9.5976	9	0.9183	9.9630	2 35.8	25.8	11 36	174
7	0 28	0 37.4	0.3951	9	9.5967	10	0.9186	9.9631	3 1.6	25.8	11 32	173
8	0 32	0 42.6	0.3942	10	9.5957	11	0.9190	9.9633	3 27.4	25.6	11 28	172
9	0 36	0 47.7	0.3932	13	9.5946	13	0.9195	9.9635	3 53.0	25.6	11 24	171
10	0 40	0 52.8	0.3920	13	9.5933	14	0.9200	9.9638	4 18.6	25.4	11 20	170
11	0 44	0 57.8	0.3907	13	9.5919	15	0.9205	9.9640	4 44.0	25.3	11 16	169
12	0 48	1 2.7	0.3894	15	9.5904	17	0.9211	9.9643	5 9.3	25.2	11 12	168
13	0 52	1 7.5	0.3879	16	9.5887	18	0.9217	9.9646	5 34.5	25.1	11 8	167
14	0 56	1 12.3	0.3863	17	9.5869	20	0.9224	9.9649	5 59.6	24.9	11 4	166
15	1 0	1 17.0	0.3846	19	9.5849	21	0.9231	9.9652	6 24.5	24.8	11 0	165
16	1 4	1 21.5	0.3827	20	9.5828	22	0.9239	9.9656	6 49.3	24.6	10 56	164
17	1 8	1 25.9	0.3807	21	9.5806	24	0.9247	9.9660	7 13.9	24.4	10 52	163
18	1 12	1 30.2	0.3786	22	9.5782	25	0.9256	9.9664	7 38.3	24.2	10 48	162
19	1 16	1 34.4	0.3764	23	9.5757	27	0.9265	9.9668	8 2.5	24.0	10 44	161
20	1 20	1 38.5	0.3741	24	9.5730	29	0.9274	9.9673	8 26.5	23.9	10 40	160
21	1 24	1 42.4	0.3717	26	9.5701	30	0.9284	9.9677	8 50.4	23.6	10 36	159
22	1 28	1 46.2	0.3691	27	9.5671	31	0.9294	9.9682	9 14.0	23.4	10 32	158
23	1 32	1 49.9	0.3664	27	9.5640	33	0.9304	9.9687	9 37.4	23.2	10 28	157
24	1 36	1 53.4	0.3637	29	9.5607	35	0.9315	9.9692	10 0.6	22.9	10 24	156
25	1 40	1 56.7	0.3608	30	9.5572	36	0.9326	9.9697	10 23.5	22.7	10 20	155
26	1 44	1 59.9	0.3578	31	9.5536	38	0.9338	9.9703	10 46.2	22.5	10 16	154
27	1 48	2 2.9	0.3547	32	9.5498	39	0.9350	9.9708	11 8.7	22.2	10 12	153
28	1 52	2 5.8	0.3515	33	9.5459	41	0.9362	9.9714	11 30.9	21.9	10 8	152
29	1 56	2 8.5	0.3482	34	9.5418	43	0.9374	9.9719	11 52.8	21.7	10 4	151
30	2 0	2 11.1	0.3448	35	9.5375	45	0.9387	9.9725	12 14.5	21.4	10 0	150
31	2 4	2 13.5	0.3413	37	9.5330	46	0.9400	9.9731	12 35.9	21.1	9 56	149
32	2 8	2 15.7	0.3376	38	9.5284	48	0.9413	9.9737	12 57.0	20.8	9 52	148
33	2 12	2 17.7	0.3338	38	9.5236	51	0.9426	9.9743	13 17.8	20.6	9 48	147
34	2 16	2 19.6	0.3300	39	9.5185	52	0.9440	9.9750	13 38.4	20.2	9 44	146
35	2 20	2 21.3	0.3261	40	9.5133	54	0.9453	9.9756	13 58.6	20.0	9 40	145
36	2 24	2 22.8	0.3221	41	9.5079	56	0.9467	9.9762	14 18.6	19.6	9 36	144
37	2 28	2 24.1	0.3180	43	9.5023	58	0.9481	9.9768	14 38.2	19.3	9 32	143
38	2 32	2 25.2	0.3137	44	9.4965	60	0.9495	9.9775	14 57.5	19.0	9 28	142
39	2 36	2 26.2	0.3093	44	9.4905	63	0.9509	9.9781	15 16.5	18.6	9 24	141
40	2 40	2 27.0	0.3049	45	9.4842	65	0.9524	9.9788	15 35.1	18.4	9 20	140
41	2 44	2 27.6	0.3004	46	9.4777	67	0.9538	9.9794	15 53.5	18.0	9 16	139
42	2 48	2 28.0	0.2958	47	9.4710	69	0.9552	9.9801	16 11.5	17.7	9 12	138
43	2 52	2 28.2	0.2911	47	9.4641	72	0.9566	9.9807	16 29.2	17.3	9 8	137
44	2 56	2 28.2	0.2864	49	9.4569	74	0.9581	9.9814	16 46.5	17.0	9 4	136
45	3 0	2 28.1	0.2815	50	9.4495	78	0.9595	9.9820	17 3.5	16.7	9 0	135
46	3 4	2 27.8	0.2765	50	9.4417	80	0.9610	9.9827	17 20.2	16.3	8 56	134
47	3 8	2 27.3	0.2715	51	9.4337	82	0.9625	9.9834	17 36.5	15.9	8 52	133
48	3 12	2 26.6	0.2664	52	9.4255	86	0.9639	9.9840	17 52.4	15.6	8 48	132
49	3 16	2 25.8	0.2612	53	9.4169	89	0.9653	9.9847	18 8.0	15.3	8 44	131
50	3 20	2 24.8	0.2559	54	9.4080	92	0.9667	9.9853	18 23.3	14.9	8 40	130
51	3 24	2 23.6	0.2505	54	9.3988	95	0.9681	9.9859	18 38.2	14.5	8 36	129
52	3 28	2 22.2	0.2451	55	9.3893	99	0.9695	9.9865	18 52.7	14.2	8 32	128
53	3 32	2 20.7	0.2396	56	9.3794	102	0.9709	9.9872	19 6.9	13.8	8 28	127
54	3 36	2 19.0	0.2340	57	9.3692	106	0.9722	9.9878	19 20.7	13.4	8 24	126
55	3 40	2 17.1	0.2283	57	9.3586	111	0.9736	9.9884	19 34.1	13.1	8 20	125

EQUATOR TO ECLIPTIC.

TABLE FOR CHANGING LATITUDE AND LONGITUDE TO RIGHT ASCENSION AND DECLINATION, OR THE REVERSE.

k	k	A	a	Diff.	Log. a	Diff.	b	Log. b	B	Diff.	k	k
°	h. m.	° ′							° ′		h. m.	°
56	3 44	2 15.1	0.2226	58	9.3475	114	0.9749	9.9890	19 47.2	12.7	8 16	124
57	3 48	2 13.0	0.2168	59	9.3361	119	0.9762	9.9895	19 59.9	12.3	8 12	123
58	3 52	2 10.7	0.2109	59	9.3242	124	0.9775	9.9901	20 12.2	12.0	8 8	122
59	3 56	2 8.2	0.2050	60	9.3118	129	0.9788	9.9907	20 24.2	11.6	8 4	121
60	4 0	2 5.6	0.1990	60	9.2989	134	0.9800	9.9912	20 35.8	11.2	8 0	120
61	4 4	2 2.8	0.1930	61	9.2855	139	0.9812	9.9918	20 47.0	10.9	7 56	119
62	4 8	1 59.9	0.1896	62	9.2716	146	0.9824	9.9923	20 57.9	10.4	7 52	118
63	4 12	1 56.9	0.1807	62	9.2570	152	0.9836	9.9928	21 8.3	10.1	7 48	117
64	4 16	1 53.7	0.1745	63	9.2418	159	0.9847	9.9933	21 18.4	9.7	7 44	116
65	4 20	1 50.4	0.1682	63	9.2259	166	0.9858	9.9938	21 28.1	9.4	7 40	115
66	4 24	1 47.0	0.1619	64	9.2093	175	0.9868	9.9942	21 37.5	8.9	7 36	114
67	4 28	1 43.5	0.1555	64	9.1918	183	0.9878	9.9947	21 46.4	8.6	7 32	113
68	4 32	1 39.8	0.1491	64	9.1735	192	0.9888	9.9951	21 55.0	8.2	7 28	112
69	4 36	1 36.1	0.1427	65	9.1543	203	0.9898	9.9955	22 3.2	7.9	7 24	111
70	4 40	1 32.2	0.1362	66	9.1340	214	0.9907	9.9959	22 11.1	7.4	7 20	110
71	4 44	1 28.2	0.1296	66	9.1126	227	0.9916	9.9963	22 18.5	7.1	7 16	109
72	4 48	1 24.2	0.1230	66	9.0899	240	0.9924	9.9967	22 25.6	6.7	7 12	108
73	4 52	1 20.0	0.1164	67	9.0659	256	0.9932	9.9970	22 32.3	6.3	7 8	107
74	4 56	1 15.7	0.1097	67	9.0403	273	0.9940	9.9974	22 38.6	5.9	7 4	106
75	5 0	1 11.4	0.1030	67	9.0130	294	0.9947	9.9977	22 44.5	5.6	7 0	105
76	5 4	1 7.0	0.0963	67	8.9836	315	0.9954	9.9980	22 50.1	5.1	6 56	104
77	5 8	1 2.5	0.0896	68	8.9521	342	0.9960	9.9982	22 55.2	4.8	6 52	103
78	5 12	0 58.0	0.0828	68	8.9179	373	0.9966	9.9985	23 0.0	4.4	6 48	102
79	5 16	0 53.4	0.0760	69	8.8806	410	0.9971	9.9987	23 4.4	4.0	6 44	101
80	5 20	0 48.7	0.0691	68	8.8396	453	0.9976	9.9990	23 8.4	3.6	6 40	100
81	5 24	0 44.0	0.0623	69	8.7943	508	0.9981	9.9992	23 12.0	3.3	6 36	99
82	5 28	0 39.2	0.0554	69	8.7435	576	0.9985	9.9993	23 15.3	2.8	6 32	98
83	5 32	0 34.4	0.0485	69	8.6859	667	0.9988	9.9995	23 18.1	2.5	6 28	97
84	5 36	0 29.6	0.0416	69	8.6192	789	0.9991	9.9996	23 20.6	2.1	6 24	96
85	5 40	0 24.7	0.0347	69	8.5403	967	0.9994	9.9997	23 22.7	1.7	6 20	95
86	5 44	0 19.8	0.0278	69	8.4436	1248	0.9996	9.9998	23 24.4	1.3	6 16	94
87	5 48	0 14.9	0.0209	70	8.3188	1760	0.9998	9.9999	23 25.7	1.0	6 12	93
88	5 52	0 9.9	0.0139	69	8.1428	3010	0.9999	0.0000	23 26.7	0.6	6 8	92
89	5 56	0 5.0	0.0070	70	7.8418		1.0000	0.0000	23 27.3	0.2	6 4	91
90	6 0	0 0.0	0.0000				1.0000	0.0000	23 27.5		6 0	90

This table is computed for an obliquity of 23° 27′ 30″.

The argument k is either the longitude or the right ascension, or their excess above 180° or $12^{h.}$

Right ascension (α) and declination (δ) are converted into longitude (λ) and latitude (β) by the formulæ

$$k = \alpha \text{ or } = \alpha - 12^{h.}$$
$$\tan. p = a \tan. (\delta - B)$$
$$\tan. \beta = b \tan. (\delta - B) \cos. p$$
$$\lambda = \alpha + A + p$$

in which the sign of a is that of cos. α
the sign of B is that of sin. α
the sign of A is that of tan. α

Longitude (λ) and latitude (β) are converted into right ascension and declination by the formulæ

$$k = \lambda = \quad = \lambda - 180^{\circ}$$
$$\tan. g = a \tan. (\beta + B)$$
$$\tan. \delta = b \tan. (\beta + B) \cos. g$$
$$\alpha = \lambda + A - g$$

in which the sign of a is that of cos. λ
the sign of B is that of sin. λ
the sign of A is that of tan. λ

The following approximate formulæ can be used when β is less than 10°.

$$\beta = b\ (\delta - B)$$
$$\lambda = \alpha + A + a\ (\delta - B) \sec. \beta$$

and the factor sec. β can be neglected when β is less than 4°.

MOON'S LIBRATION.

TABLE FOR THE LIBRATION OF THE MOON.

☊ — λ	Δ λ	a^{-1}	B	☊ — λ	☊ — λ	Δ λ	a^{-1}	B	☊ — λ
°			° ′	°	°	′		° ′	°
0	0.0	39	0 0.0	180	46	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0 4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202.	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0· 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

Δ λ has the sign of tan. (☊ — λ)
a has the sign of cos. (☊ — λ)
B has the sign of sin. (☊ — λ)

When ☊ — λ exceeds 180° the table is to be entered with (☊ — λ) — 180° as the argument in the column ☊ — λ.

MOON'S MEAN MOTION.

MOON'S MEAN MOTION IN LONGITUDE FOR SIDEREAL INTERVALS.

Day.	☾'s Motion in Longitude.	Minutes.	☾'s Motion in Longitude.	Minutes.	☾'s Motion in Longitude.
	° ′		′		′
				30	16.4
1	13 8.4	1	0.5	31	17.0
2	26 16.9	2	1.1	32	17.5
3	39 25.3	3	1.6	33	18.1
4	52 33.7	4	2.2	34	18.6
5	65 42.1	5	2.7	35	19.2
6	78 50.6	6	3.3	36	19.7
7	91 59.0	7	3.8	37	20.3
8	105 7.4	8	4.4	38	20.8
9	118 15.8	9	4.9	39	21.4
10	131 24.3	10	5.5	40	21.9
Hour.		11	6.0	41	22.4
		12	6.6	42	23.0
1	0 32.9	13	7.1	43	23 5
2	1 5.7	14	7.7	44	24.1
3	1 38.6	15	8.2	45	24.6
4	2 11.3	16	8.8	46	25.2
5	2 44.3	17	9.3	47	25.7
6	3 17.1	18	9.9	48	26.3
7	3 50.0	19	10.4	49	26.8
8	4 22.8	20	11.0	50	27.4
9	4 55.7	21	11.5	51	27.9
10	5 28.5	22	12.0	52	28.5
11	6 1.4	23	12.5	53	29.0
12	6 34.2	24	13.1	54	29.6
13	7 7.1	25	13.6	55	30.1
14	7 39.9	26	14.2	56	30.7
15	8 12.8	27	14.7	57	31.2
16	8 45.6	28	15.3	58	31.8
17	9 18.5	29	15.9	59	32.3
18	9 51.3	30	16.4	60	32.9
				Seconds.	′
19	10 24.2			10	0.1
20	10 57.0			20	0.2
21	11 29.9			30	0.3
22	12 2.7			40	0.4
23	12 35.6			50	0.5
24	13 8.4			60	0.5

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
°	'	"										
0h.	0m.	0s.		0.0000	0.3010	0.4771	0.6021	0.6990	0.7782	0 8451	0.9031	0.9542
	0	10	1.0000	1.0414	1.0792	1.1139	1.1461	1.1761	1.2041	1.2304	1.2553	1.2788
	0	20	1.3010	1.3222	1.3424	1.3617	1.3802	1.3979	1.4150	1.4314	1.4472	1.4624
	0	30	1.4771	1.4914	1.5051	1.5185	1.5315	1.5441	1.5563	1.5682	1.5798	1.5911
	0	40	1.6021	1.6128	1.6232	1.6335	1.6435	1.6532	1.6628	1.6721	1.6812	1.6902
	0	50	1.6990	1.7076	1.7160	1.7243	1.7324	1.7404	1.7482	1.7559	1.7634	1.7709
0	1	0	1.7782	1.7853	1.7924	1.7993	1.8062	1.8129	1.8195	1.8261	1.8325	1.8388
	1	10	1.8451	1.8513	1.8573	1.8633	1.8692	1.8751	1.8808	1.8865	1.8921	1.8976
	1	20	1.9031	1.9085	1.9138	1.9191	1.9243	1.9294	1.9345	1.9395	1.9445	1.9494
	1	30	1.9542	1.9589	1.9638	1.9685	1.9731	1.9777	1.9823	1.9868	1.9912	1.9956
	1	40	2.0000	2.0043	2.0086	2.0128	2.0170	2.0212	2.0253	2.0294	2.0334	2.0374
	1	50	2.0414	2.0453	2.0492	2.0531	2.0569	2.0607	2.0645	2.0682	2.0719	2.0755
0	2	0	2.0792	2.0828	2.0864	2.0899	2.0934	2.0969	2.1004	2.1038	2.1072	2.1106
	2	10	2.1139	2.1173	2.1206	2.1239	2.1271	2.1303	2.1335	2.1367	2.1399	2.1430
	2	20	2.1461	2.1492	2.1523	2.1553	2.1584	2.1614	2.1644	2.1673	2.1703	2.1732
	2	30	2.1761	2.1790	2.1818	2.1847	2.1875	2.1903	2.1931	2.1959	2.1987	2.2014
	2	40	2.2041	2.2068	2.2095	2.2122	2.2148	2.2175	2.2201	2.2227	2.2253	2.2279
	2	50	2.2304	2.2330	2.2355	2.2380	2.2405	2.2430	2.2455	2.2480	2.2504	2.2529
0	3	0	2.2553	2.2577	2.2601	2.2625	2.2648	2.2672	2.2695	2.2718	2.2742	2.2765
	3	10	2.2788	2.2810	2.2833	2.2856	2.2878	2.2900	2.2923	2.2945	2.2967	2.2989
	3	20	2.3010	2.3032	2.3054	2.3075	2.3096	2.3118	2.3139	2.3160	2.3181	2.3201
	3	30	2.3222	2.3243	2.3263	2.3284	2.3304	2.3324	2.3345	2.3365	2.3385	2.3404
	3	40	2.3424	2.3444	2.3464	2.3483	2.3502	2.3522	2.3541	2.3560	2.3579	2.3598
	3	50	2 3617	2.3636	2.3655	2.3674	2.3692	2.3711	2.3729	2.3747	2.3766	2.3784
0	4	0	2.3802	2.3820	2 3838	2.3856	2.3874	2.3892	2.3909	2.3927	2.3945	2.3962
	4	10	2.3979	2.3997	2.4014	2.4031	2.4048	2.4065	2.4082	2.4099	2.4116	2.4133
	4	20	2.4150	2.4166	2.4183	2.4200	2.4216	2.4232	2.4249	2.4265	2.4281	2.4298
	4	30	2.4314	2.4330	2.4346	2.4362	2.4378	2.4393	2.4409	2.4425	2.4440	2.4456
	4	40	2.4472	2.4487	2.4502	2.4518	2.4533	2.4548	2.4564	2.4579	2.4594	2.4609
	4	50	2.4624	2.4639	2.4654	2.4669	2.4683	2.4698	2.4713	2.4728	2.4742	2.4757
0	5	0	2.4771	2.4786	2.4800	2.4814	2.4829	2.4843	2.4857	2.4871	2.4886	2.4900
	5	10	2.4914	2.4928	2.4942	2.4955	2.4969	2.4983	2.4997	2.5011	2.5024	2.5038
	5	20	2.5051	2.5065	2.5079	2.5092	2.5105	2.5119	2.5132	2.5145	2.5159	2.5172
	5	30	2.5185	2.5198	2.5211	2.5224	2.5237	2.5250	2.5263	2.5276	2.5289	2.5302
	5	40	2.5315	2.5328	2.5340	2.5353	2.5366	2.5378	2.5391	2 5403	2.5416	2.5428
	5	50	2.5441	2.5453	2.5465	2.5478	2.5490	2.5502	2.5514	2.5527	2.5539	2.5551
0	6	0	2.5563	2.5575	2.5587	2.5599	2.5611	2.5623	2.5635	2.5647	2.5658	2.5670
	6	10	2.5682	2.5694	2.5705	2.5717	2.5729	2.5740	2.5752	2.5763	2.5775	2.5786
	6	20	2.5798	2.5809	2.5821	2.5832	2.5843	2.5855	2.5866	2.5877	2.5888	2.5899
	6	30	2.5911	2.5922	2.5933	2.5944	2.5955	2.5966	2.5977	2.5988	2.5999	2.6010
	6	40	2.6021	2.6031	2.6042	2.6053	2.6064	2.6075	2.6085	2.6096	2.6107	2.6117
	6	50	2.6128	2.6138	2.6149	2.6160	2.6170	2.6180	2.6191	2.6201	2.6212	2.6222
0	7	0	2.6232	2.6243	2.6253	2.6263	2.6274	2.6284	2.6294	2.6304	2.6314	2.6325
	7	10	2.6335	2.6345	2.6355	2.6365	2.6375	2.6385	2.6395	2.6405	2.6415	2.6425
	7	20	2.6435	2.6444	2.6454	2.6464	2.6474	2.6484	2.6493	2.6503	2.6513	2.6522
	7	30	2.6532	2.6542	2.6551	2.6561	2.6571	2.6580	2.6590	2.6599	2.6609	2.6618
	7	40	2.6628	2.6637	2.6646	2.6656	2.6665	2.6675	2.6684	2.6693	2.6702	2.6712
	7	50	2.6721	2.6730	2.6739	2.6749	2.6758	2.6767	2.6776	2.6785	2.6794	2.6803
0	8	0	2.6812	2.6821	2.6830	2.6839	2.6848	2.6857	2.6866	2.6875	2.6884	2.6893
	8	10	2.6902	2.6911	2.6920	2.6928	2.6937	2.6946	2.6955	2.6964	2.6972	2.6981
	8	20	2.6990	2.6998	2.7007	2.7016	2.7024	2.7033	2.7042	2.7050	2.7059	2.7067
	8	30	2.7076	2.7084	2.7093	2.7101	2.7110	2.7118	2.7126	2.7135	2.7143	2.7152
	8	40	2.7160	2.7168	2.7177	2.7185	2.7193	2.7202	2.7210	2.7218	2.7226	2.7235
	8	50	2.7243	2.7251	2.7259	2.7267	2.7275	2.7284	2.7292	2.7300	2.7308	2.7316
0	9	0	2.7324	2.7332	2.7340	2.7348	2.7356	2.7364	2.7372	2.7380	2.7388	2.7396
	9	10	2.7404	2.7412	2.7419	2.7427	2.7435	2.7443	2.7451	2.7459	2.7466	2.7474
	9	20	2.7482	2.7490	2.7497	2.7505	2.7513	2.7520	2.7528	2.7536	2.7543	2.7551
	9	30	2.7559	2.7566	2.7574	2.7582	2.7589	2.7597	2.7604	2.7612	2.7619	2.7627
	9	40	2.7634	2.7642	2.7649	2.7657	2.7664	2.7672	2.7679	2.7686	2.7694	2.7701
	9	50	2.7709	2.7716	2.7723	2.7731	2.7738	2.7745	2.7752	2.7760	2.7767	2.7774

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° ′ ″ $0^h\,10^m\,0^s$	2.7782	2.7789	2.7796	2.7803	2.7810	2.7818	2.7825	2.7832	2.7839	2.7846
10 10	2.7853	2.7860	2.7868	2.7875	2.7882	2.7889	2.7896	2.7903	2.7910	2.7917
10 20	2.7924	2.7931	2.7938	2.7945	2.7952	2.7959	2.7966	2.7973	2.7980	2.7987
10 30	2.7993	2.8000	2.8007	2.8014	2.8021	2.8028	2.8035	2.8041	2.8048	2.8055
10 40	2.8062	2.8069	2.8075	2.8082	2.8089	2.8096	2.8102	2.8109	2.8116	2.8122
10 50	2.8129	2.8136	2.8142	2.8149	2.8156	2.8162	2.8169	2.8176	2.8182	2.8189
0 11 0	2.8195	2.8202	2.8209	2.8215	2.8222	2.8228	2.8235	2.8241	2.8248	2.8254
11 10	2.8261	2.8267	2.8274	2.8280	2.8287	2.8293	2.8299	2.8306	2.8312	2.8319
11 20	2.8325	2.8331	2.8338	2.8344	2.8351	2.8357	2.8363	2.8370	2.8376	2.8382
11 30	2.8388	2.8395	2.8401	2.8407	2.8414	2.8420	2.8426	2.8432	2.8439	2.8445
11 40	2.8451	2.8457	2.8463	2.8470	2.8476	2.8482	2.8488	2.8494	2.8500	2.8506
11 50	2.8513	2.8519	2.8525	2.8531	2.8537	2.8543	2.8549	2.8555	2.8561	2.8567
0 12 0	2.8573	2.8579	2.8585	2.8591	2.8597	2.8603	2.8609	2.8615	2.8621	2.8627
12 10	2.8633	2.8639	2.8645	2.8651	2.8657	2.8663	2.8669	2.8675	2.8681	2.8686
12 20	2.8692	2.8698	2.8704	2.8710	2.8716	2.8722	2.8727	2.8733	2.8739	2.8745
12 30	2.8751	2.8756	2.8762	2.8768	2.8774	2.8779	2.8785	2.8791	2.8797	2.8802
12 40	2.8808	2.8814	2.8820	2.8825	2.8831	2.8837	2.8842	2.8848	2.8854	2.8859
12 50	2.8865	2.8871	2.8876	2.8882	2.8887	2.8893	2.8899	2.8904	2.8910	2.8915
0 13 0	2.8921	2.8927	2.8932	2.8938	2.8943	2.8949	2.8954	2.8960	2.8965	2.8971
13 10	2.8976	2.8982	2.8987	2.8993	2.8998	2.9004	2.9009	2.9015	2.9020	2.9025
13 20	2.9031	2.9036	2.9042	2.9047	2.9053	2.9058	2.9063	2.9069	2.9074	2.9079
13 30	2.9085	2.9090	2.9096	2.9101	2.9106	2.9112	2.9117	2.9122	2.9128	2.9133
13 40	2.9138	2.9143	2.9149	2.9154	2.9159	2.9165	2.9170	2.9175	2.9180	2.9186
13 50	2.9191	2.9196	2.9201	2.9206	2.9212	2.9217	2.9222	2.9227	2.9232	2.9238
0 14 0	2.9243	2.9248	2.9253	2.9258	2.9263	2.9269	2.9274	2.9279	2.9284	2.9289
14 10	2.9294	2.9299	2.9304	2.9309	2.9315	2.9320	2.9325	2.9330	2.9335	2.9340
14 20	2.9345	2.9350	2.9355	2.9360	2.9365	2.9370	2.9375	2.9380	2.9385	2.9390
14 30	2.9395	2.9400	2.9405	2.9410	2.9415	2.9420	2.9425	2.9430	2.9435	2.9440
14 40	2.9445	2.9450	2.9455	2.9460	2.9465	2.9469	2.9474	2.9479	2.9484	2.9489
14 50	2.9494	2.9499	2.9504	2.9509	2.9513	2.9518	2.9523	2.9528	2.9533	2.9538
0 15 0	2.9542	2.9547	2.9552	2.9557	2.9562	2.9566	2.9571	2.9576	2.9581	2.9586
15 10	2.9590	2.9595	2.9600	2.9605	2.9609	2.9614	2.9619	2.9624	2.9628	2.9633
15 20	2.9638	2.9643	2.9647	2.9652	2.9657	2.9661	2.9666	2.9671	2.9675	2.9680
15 30	2.9685	2.9689	2.9694	2.9699	2.9703	2.9708	2.9713	2.9717	2.9722	2.9727
15 40	2.9731	2.9736	2.9741	2.9745	2.9750	2.9754	2.9759	2.9763	2.9768	2.9773
15 50	2.9777	2.9782	2.9786	2.9791	2.9795	2.9800	2.9805	2.9809	2.9814	2.9818
0 16 0	2.9823	2.9827	2.9832	2.9836	2.9841	2.9845	2.9850	2.9854	2.9859	2.9863
16 10	2.9868	2.9872	2.9877	2.9881	2.9886	2.9890	2.9894	2.9899	2.9903	2.9908
16 20	2.9912	2.9917	2.9921	2.9926	2.9930	2.9934	2.9939	2.9943	2.9948	2.9952
16 30	2.9956	2.9961	2.9965	2.9969	2.9974	2.9978	2.9983	2.9987	2.9991	2.9996
16 40	3.0000	3.0004	3.0009	3.0013	3.0017	3.0022	3.0026	3.0030	3.0035	3.0039
16 50	3.0043	3.0048	3.0052	3.0056	3.0060	3.0065	3.0069	3.0073	3.0077	3.0082
0 17 0	3.0086	3.0090	3.0095	3.0099	3.0103	3.0107	3.0111	3.0116	3.0120	3.0124
17 10	3.0128	3.0133	3.0137	3.0141	3.0145	3.0149	3.0154	3.0158	3.0162	3.0166
17 20	3.0170	3.0175	3.0179	3.0183	3.0187	3.0191	3.0195	3.0199	3.0204	3.0208
17 30	3.0212	3.0216	3.0220	3.0224	3.0228	3.0233	3.0237	3.0241	3.0245	3.0249
17 40	3.0253	3.0257	3.0261	3.0265	3.0269	3.0273	3.0278	3.0282	3.0286	3.0290
17 50	3.0294	3.0298	3.0302	3.0306	3.0310	3.0314	3.0318	3.0322	3.0326	3.0330
0 18 0	3.0334	3.0338	3.0342	3.0346	3.0350	3.0354	3.0358	3.0362	3.0366	3.0370
18 10	3.0374	3.0378	3.0382	3.0386	3.0390	3.0394	3.0398	3.0402	3.0406	3.0410
18 20	3.0414	3.0418	3.0422	3.0426	3.0430	3.0434	3.0438	3.0441	3.0445	3.0449
18 30	3.0453	3.0457	3.0461	3.0465	3.0469	3.0473	3.0477	3.0481	3.0484	3.0488
18 40	3.0492	3.0496	3.0500	3.0504	3.0508	3.0512	3.0515	3.0519	3.0523	3.0527
18 50	3.0531	3.0535	3.0538	3.0542	3.0546	3.0550	3.0554	3.0558	3.0561	3.0565
0 19 0	3.0569	3.0573	3.0577	3.0580	3.0584	3.0588	3.0592	3.0596	3.0599	3.0603
19 10	3.0607	3.0611	3.0615	3.0618	3.0622	3.0626	3.0630	3.0633	3.0637	3.0641
19 20	3.0645	3.0648	3.0652	3.0656	3.0660	3.0663	3.0667	3.0671	3.0674	3.0678
19 30	3.0682	3.0686	3.0689	3.0693	3.0697	3.0700	3.0704	3.0708	3.0711	3.0715
19 40	3.0719	3.0722	3.0726	3.0730	3.0734	3.0737	3.0741	3.0745	3.0748	3.0752
19 50	3.0755	3.0759	3.0763	3.0766	3.0770	3.0774	3.0777	3.0781	3.0785	3.0788

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
$0^{\circ h}\ 20^{\prime m}\ 0^{\prime\prime s}$	3.0792	3.0795	3.0799	3.0803	3.0806	3.0810	3.0813	3.0817	3.0821	3.0824
20 10	3.0828	3.0831	3.0835	3.0839	3.0842	3.0846	3.0849	3.0853	3.0856	3.0860
20 20	3.0864	3.0867	3.0871	3.0874	3.0878	3.0881	3.0885	3.0888	3.0892	3.0896
20 30	3.0899	3.0903	3.0906	3.0910	3.0913	3.0917	3.0920	3.0924	3.0927	3.0931
20 40	3.0934	3.0938	3.0941	3.0945	3.0948	3.0952	3.0955	3.0959	3.0962	3.0966
20 50	3.0969	3.0973	3.0976	3.0980	3.0983	3.0986	3.0990	3.0993	3.0997	3.1000
0 21 0	3.1004	3.1007	3.1011	3.1014	3.1017	3.1021	3.1024	3.1028	3.1031	3.1035
21 10	3.1038	3.1041	3.1045	3.1048	3.1052	3.1055	3.1059	3.1062	3.1065	3.1069
21 20	3.1072	3.1075	3.1079	3.1082	3.1086	3.1089	3.1092	3.1096	3.1099	3.1103
21 30	3.1106	3.1109	3.1113	3.1116	3.1119	3.1123	3.1126	3.1129	3.1133	3.1136
21 40	3.1139	3.1143	3.1146	3.1149	3.1153	3.1156	3.1159	3.1163	3.1166	3.1169
21 50	3.1173	3.1176	3.1179	3.1183	3.1186	3.1189	3.1193	3.1196	3.1199	3.1202
0 22 0	3.1206	3.1209	3.1212	3.1216	3.1219	3.1222	3.1225	3.1229	3.1232	3.1235
22 10	3.1239	3.1242	3.1245	3.1248	3.1252	3.1255	3.1258	3.1261	3.1265	3.1268
22 20	3.1271	3.1274	3.1278	3.1281	3.1284	3.1287	3.1290	3.1294	3.1297	3.1300
22 30	3.1303	3.1307	3.1310	3.1313	3.1316	3.1319	3.1323	3.1326	3.1329	3.1332
22 40	3.1335	3.1339	3.1342	3.1345	3.1348	3.1351	3.1355	3.1358	3.1361	3.1364
22 50	3.1367	3.1370	3.1374	3.1377	3.1380	3.1383	3.1386	3.1389	3.1392	3.1396
0 23 0	3.1399	3.1402	3.1405	3.1408	3.1411	3.1414	3.1418	3.1421	3.1424	3.1427
23 10	3.1430	3.1433	3.1436	3.1440	3.1443	3.1446	3.1449	3.1452	3.1455	3.1458
23 20	3.1461	3.1464	3.1467	3.1471	3.1474	3.1477	3.1480	3.1483	3.1486	3.1489
23 30	3.1492	3.1495	3.1498	3.1501	3.1504	3.1508	3.1511	3.1514	3.1517	3.1520
23 40	3.1523	3.1526	3.1529	3.1532	3.1535	3.1538	3.1541	3.1544	3.1547	3.1550
23 50	3.1553	3.1556	3.1559	3.1562	3.1565	3.1569	3.1572	3.1575	3.1578	3.1581
0 24 0	3.1584	3.1587	3.1590	3.1593	3.1596	3.1599	3.1602	3.1605	3.1608	3.1611
24 10	3.1614	3.1617	3.1620	3.1623	3.1626	3.1629	3.1632	3.1635	3.1638	3.1641
24 20	3.1644	3.1647	3.1649	3.1652	3.1655	3.1658	3.1661	3.1664	3.1667	3.1670
24 30	3.1673	3.1676	3.1679	3.1682	3.1685	3.1688	3.1691	3.1694	3.1697	3.1700
24 40	3.1703	3.1706	3.1708	3.1711	3.1714	3.1717	3.1720	3.1723	3.1726	3.1729
24 50	3.1732	3.1735	3.1738	3.1741	3.1744	3.1746	3.1749	3.1752	3.1755	3.1758
0 25 0	3.1761	3.1764	3.1767	3.1770	3.1772	3.1775	3.1778	3.1781	3.1784	3.1787
25 10	3.1790	3.1793	3.1796	3.1798	3.1801	3.1804	3.1807	3.1810	3.1813	3.1816
25 20	3.1818	3.1821	3.1824	3.1827	3.1830	3.1833	3.1836	3.1838	3.1841	3.1844
25 30	3.1847	3.1850	3.1853	3.1855	3.1858	3.1861	3.1864	3.1867	3.1870	3.1872
25 40	3.1875	3.1878	3.1881	3.1884	3.1886	3.1889	3.1892	3.1895	3.1898	3.1901
25 50	3.1903	3.1906	3.1909	3.1912	3.1915	3.1917	3.1920	3.1923	3.1926	3.1928
0 26 0	3.1931	3.1934	3.1937	3.1940	3.1942	3.1945	3.1948	3.1951	3.1953	3.1956
26 10	3.1959	3.1962	3.1965	3.1967	3.1970	3.1973	3.1976	3.1978	3.1981	3.1984
26 20	3.1987	3.1989	3.1992	3.1995	3.1998	3.2000	3.2003	3.2006	3.2009	3.2011
26 30	3.2014	3.2017	3.2019	3.2022	3.2025	3.2028	3.2030	3.2033	3.2036	3.2038
26 40	3.2041	3.2044	3.2047	3.2049	3.2052	3.2055	3.2057	3.2060	3.2063	3.2066
26 50	3.2068	3.2071	3.2074	3.2076	3.2079	3.2082	3.2084	3.2087	3.2090	3.2092
0 27 0	3.2095	3.2098	3.2101	3.2103	3.2106	3.2109	3.2111	3.2114	3.2117	3.2119
27 10	3.2122	3.2125	3.2127	3.2130	3.2133	3.2135	3.2138	3.2140	3.2143	3.2146
27 20	3.2148	3.2151	3.2154	3.2156	3.2159	3.2162	3.2164	3.2167	3.2170	3.2172
27 30	3.2175	3.2177	3.2180	3.2183	3.2185	3.2188	3.2191	3.2193	3.2196	3.2198
27 40	3.2201	3.2204	3.2206	3.2209	3.2212	3.2214	3.2217	3.2219	3.2222	3.2225
27 50	3.2227	3.2230	3.2232	3.2235	3.2238	3.2240	3.2243	3.2245	3.2248	3.2250
0 28 0	3.2253	3.2256	3.2258	3.2261	3.2263	3.2266	3.2269	3.2271	3.2274	3.2276
28 10	3.2279	3.2281	3.2284	3.2287	3.2289	3.2292	3.2294	3.2297	3.2299	3.2302
28 20	3.2304	3.2307	3.2310	3.2312	3.2315	3.2317	3.2320	3.2322	3.2325	3.2327
28 30	3.2330	3.2333	3.2335	3.2338	3.2340	3.2343	3.2345	3.2348	3.2350	3.2353
28 40	3.2355	3.2358	3.2360	3.2363	3.2365	3.2368	3.2370	3.2373	3.2375	3.2378
28 50	3.2380	3.2383	3.2385	3.2388	3.2390	3.2393	3.2395	3.2398	3.2400	3.2403
0 29 0	3.2405	3.2408	3.2410	3.2413	3.2415	3.2418	3.2420	3.2423	3.2425	3.2428
29 10	3.2430	3.2433	3.2435	3.2438	3.2440	3.2443	3.2445	3.2448	3.2450	3.2453
29 20	3.2455	3.2458	3.2460	3.2463	3.2465	3.2467	3.2470	3.2472	3.2475	3.2477
29 30	3.2480	3.2482	3.2485	3.2487	3.2490	3.2492	3.2494	3.2497	3.2499	3.2502
29 40	3.2504	3.2507	3.2509	3.2512	3.2514	3.2516	3.2519	3.2521	3.2524	3.2526
29 50	3.2529	3.2531	3.2533	3.2536	3.2538	3.2541	3.2543	3.2545	3.2548	3.2550

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	$0''$	$1''$	$2''$	$3''$	$4''$	$5''$	$6''$	$7''$	$8''$	$9''$
$\overset{\circ}{0}{}^{h}\ \overset{\prime}{30}{}^{m}\ \overset{\prime\prime}{0}{}^{s}$	3.2553	3.2555	3.2558	3.2560	3.2562	3.2565	3.2567	3.2570	3.2572	3.2574
30 10	3.2577	3.2579	3.2582	3.2584	3.2586	3.2589	3.2591	3.2594	3.2596	3.2598
30 20	3.2601	3.2603	3.2605	3.2608	3.2610	3.2613	3.2615	3.2617	3.2620	3.2622
30 30	3.2625	3.2627	3.2629	3.2632	3.2634	3.2636	3.2639	3.2641	3.2643	3.2646
30 40	3.2648	3.2651	3.2653	3.2655	3.2658	3.2660	3.2662	3.2665	3.2667	3.2669
30 50	3.2672	3.2674	3.2676	3.2679	3.2681	3.2683	3.2686	3.2688	3.2690	3.2693
0 31 0	3.2695	3.2697	3.2700	3.2702	3 2704	3 2707	3.2709	3.2711	3.2714	3.2716
31 10	3.2718	3.2721	3.2723	3.2725	3.2728	3.2730	3.2732	3.2735	3.2737	3.2739
31 20	3.2742	3.2744	3.2746	3.2749	3.2751	3.2753	3.2755	3.2758	3.2760	3.2762
31 30	3.2765	3.2767	3.2769	3.2772	3.2774	3.2776	3.2778	3.2781	3.2783	3.2785
31 40	3.2788	3.2790	3.2792	3.2794	3.2797	3.2799	3.2801	3.2804	3.2806	3.2808
31 50	3.2810	3.2813	3.2815	3.2817	3.2819	3.2822	3.2824	3.2826	3.2828	3.2831
0 32 0	3.2833	3.2835	3.2838	3.2840	3.2842	3.2844	3.2847	3.2849	3.2851	3.2853
32 10	3.2856	3.2858	3.2860	3.2862	3.2865	3.2867	3.2869	3.2871	3.2874	3.2876
32 20	3.2878	3.2880	3.2882	3.2885	3.2887	3.2889	3.2891	3.2894	3.2896	3.2898
32 30	3.2900	3.2903	3.2905	3.2907	3.2909	3.2911	3.2914	3.2916	3.2918	3.2920
32 40	3.2923	3.2925	3.2927	3.2929	3.2931	3.2934	3.2936	3.2938	3.2940	3.2942
32 50	3.2945	3.2947	3.2949	3.2951	3.2953	3.2956	3.2958	3.2960	3.2962	3.2964
0 33 0	3.2967	3.2969	3.2971	3.2973	3.2975	3.2978	3.2980	3.2982	3.2984	3.2986
33 10	3.2989	3.2991	3.2993	3.2995	3.2997	3.2999	3.3002	3.3004	3.3006	3.3008
33 20	3.3010	3.3012	3.3015	3.3017	3.3019	3.3021	3.3023	3.3025	3.3028	3.3030
33 30	3.3032	3.3034	3.3036	3.3038	3.3041	3.3043	3.3045	3.3047	3.3049	3.3051
32 40	3.3054	3.3056	3.3058	3.3060	3.3062	3.3064	3.3066	3.3069	3.3071	3.3073
33 50	3.3075	3 3077	3.3079	3.3081	3.3084	3.3086	3.3088	3.3090	3.3092	3.3094
0 34 0	3.3096	3.3098	3.3101	3.3103	3.3105	3.3107	3.3109	3.3111	3.3113	3.3115
34 10	3.3118	3.3120	3.3122	3.3124	3.3126	3.3128	3.3130	3.3132	3.3134	3.3137
34 20	3.3139	3.3141	3.3143	3.3145	3.3147	3.3149	3.3151	3.3153	3.3156	3.3158
34 30	3.3160	3.3162	3.3164	3.3166	3.3168	3.3170	3.3172	3.3174	3.3176	3.3179
34 40	3.3181	3.3183	3.3185	3.3187	3.3189	3.3191	3.3193	3.3195	3.3197	3.3199
34 50	3.3201	3.3204	3.3206	3.3208	3.3210	3.3212	3.3214	3.3216	3.3218	3.3220
0 35 0	3.3222	3.3224	3.3226	3.3228	3.3230	3.3233	3.3235	3.3237	3.3239	3.3241
35 10	3.3243	3.3245	3.3247	3.3249	3.3251	3.3253	3.3255	3.3257	3.3259	3.3261
35 20	3.3263	3.3265	3.3267	3.3269	3.3272	3.3274	3.3276	3.3278	3.3280	3.3282
35 30	3.3284	3.3286	3.3288	3.3290	3.3292	3.3294	3.3296	3.3298	3.3300	3.3302
35 40	3.3304	3.3306	3.3308	3.3310	3.3312	3.3314	3.3316	3.3318	3.3320	3.3322
35 50	3.3324	3.3326	3.3328	3.3330	3.3332	3.3334	3.3336	3.3339	3 3341	3.3343
0 36 0	3.3345	3.3347	3.3349	3.3351	3.3353	3.3355	3.3357	3.3359	3.3361	3.3363
36 10	3.3365	3.3367	3.3369	3.3371	3.3373	3.3375	3.3377	3.3379	3.3381	3.3383
36 20	3.3385	3.3387	3.3389	3.3391	3.3393	3.3395	3.3397	3.3398	3.3400	3.3402
36 30	3.3404	3.3406	3.3408	3.3410	3.3412	3.3414	3.3416	3.3418	3.3420	3.3422
36 40	3.3424	3.3426	3.3428	3.3430	3.3432	3.3434	3.3436	3.3438	3.3440	3.3442
36 50	3.3444	3.3446	3.3448	3.3450	3.3452	3.3454	3.3456	3.3458	3.3460	3.3462
0 37 0	3.3464	3.3465	3.3467	3.3469	3.3471	3.3473	3.3475	3.3477	3.3479	3.3481
37 10	3.3483	3.3485	3.3487	3.3489	3.3491	3.3493	3.3495	3.3497	3.3499	3.3501
37 20	3.3502	3.3504	3.3506	3.3508	3.3510	3.3512	3.3514	3.3516	3.3518	3.3520
37 30	3.3522	3 3524	3.3526	3.3528	3.3530	3.3531	3.3533	3.3535	3.3537	3.3539
37 40	3.3541	3.3543	3.3545	3.3547	3.3549	3.3551	3.3553	3.3555	3.3556	3.3558
37 50	3.3560	3 3562	3.3564	3.3566	3.3568	3.3570	3.3572	3.3574	3.3576	3.3577
0 38 0	3.3579	3.3581	3.3583	3.3585	3.3587	3.3589	3.3591	3.3593	3.3595	3.3596
38 10	3.3598	3.3600	3.3602	3.3604	3.3606	3.3608	3.3610	3.3612	3.3614	3.3615
38 20	3.3617	3.3619	3.3621	3.3623	3.3625	3.3627	3.3629	3.3630	3.3632	3.3634
38 30	3.3636	3.3638	3.3640	3.3642	3.3644	3.3646	3.3647	3.3649	3.3651	3.3653
38 40	3.3655	3.3657	3.3659	3.3660	3.3662	3.3664	3.3666	3.3668	3.3670	3.3672
38 50	3.3674	3.3675	3.3677	3.3679	3.3681	3.3683	3.3685	3.3687	3.3688	3.3690
0 39 0	3.3692	3.3694	3.3696	3.3698	3.3700	3.3701	3.3703	3.3705	3.3707	3.3709
39 10	3.3711	3.3713	3.3714	3.3716	3.3718	3.3720	3.3722	3.3724	3.3725	3.3727
39 20	3.3729	3.3731	3.3733	3.3735	3.3736	3.3738	3.3740	3.3742	3.3744	3.3746
39 30	3.3747	3.3749	3.3751	3.3753	3.3755	3.3757	3.3758	3.3760	3.3762	3.3764
39 40	3.3766	3.3768	3.3769	3.3771	3.3773	3.3775	3.3777	3.3779	3.3780	3.3782
39 50	3.3784	3.3786	3.3788	3.3789	3.3791	3.3793	3.3795	3.3797	3.3798	3.3800

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{0}{}^{h.}\ \overset{\prime}{40}{}^{m.}\ \overset{\prime\prime}{0}{}^{s.}$	3.3802	3.3804	3.3806	3.3808	3.3809	3.3811	3.3813	3.3815	3.3817	3.3818
40 10	3.3820	3.3822	3.3824	3.3826	3.3827	3.3829	3.3831	3.3833	3.3835	3.3836
40 20	3.3838	3.3840	3.3842	3.3844	3.3845	3.3847	3.3849	3.3851	3.3852	3.3854
40 30	3.3856	3.3858	3.3860	3.3861	3.3863	3.3865	3.3867	3.3869	3.3870	3.3872
40 40	3.3874	3.3876	3.3877	3.3879	3.3881	3.3883	3.3885	3.3886	3.3888	3.3890
40 50	3.3892	3.3893	3.3895	3.3897	3.3899	3.3901	3.3902	3.3904	3.3906	3.3908
41 0	3.3909	3.3911	3.3913	3.3915	3.3916	3.3918	3.3920	3.3922	3.3923	3.3925
41 10	3.3927	3.3929	3.3930	3.3932	3.3934	3.3936	3.3938	3.3939	3.3941	3.3943
41 20	3 3945	3.3946	3.3948	3.3950	3 3952	3.3953	3.3955	3.3957	3.3959	3.3960
41 30	3.3962	3.3964	3.3965	3.3967	3.3969	3.3971	3.3972	3.3974	3.3976	3.3978
41 40	3 3979	3.3981	3.3983	3.3985	3.3986	3.3988	3.3990	3.3992	3.3993	3.3995
41 50	3.3997	3.3998	3.4000	3.4002	3.4004	3.4005	3.4007	3.4009	3.4011	3.4012
0 42 0	3.4014	3.4016	3.4017	3.4019	3.4021	3.4023	3.4024	3.4026	3.4028	3.4029
42 10	3.4031	3.4033	3.4035	3.4036	3.4038	3.4040	3.4041	3.4043	3.4045	3.4047
42 20	3.4048	3.4050	3.4052	3.4053	3.4055	3.4057	3.4059	3.4060	3.4062	3.4064
42 30	3.4065	3.4067	3.4069	3.4071	3.4072	3.4074	3.4076	3.4077	3.4079	3.4081
42 40	3.4082	3.4084	3.4086	3.4087	3.4089	3.4091	3.4093	3.4094	3.4096	3.4098
42 50	3.4099	3.4101	3.4103	3.4104	3.4106	3.4108	3.4109	3.4111	3.4113	3.4115
0 43 0	3.4116	3.4118	3.4120	3.4121	3.4123	3.4125	3.4126	3.4128	3.4130	3.4131
43 10	3.4133	3.4135	3.4136	3.4138	3.4140	3.4141	3.4143	3.4145	3.4146	3.4148
43 20	3.4150	3.4151	3.4153	3.4155	3.4156	3.4158	3.4160	3.4161	3.4163	3.4165
43 30	3.4166	3.4168	3.4170	3.4171	3.4173	3.4175	3.4176	3.4178	3.4180	3.4181
43 40	3 4183	3.4185	3.4186	3.4188	3.4190	3.4191	3.4193	3.4195	3.4196	3.4198
43 50	3.4200	3.4201	3.4203	3.4205	3.4206	3.4208	3.4209	3.4211	3.4213	3.4214
0 44 0	3.4216	3.4218	3.4219	3.4221	3.4223	3.4224	3.4226	3.4228	3.4229	3.4231
44 10	3.4232	3.4234	3.4236	3.4237	3.4239	3.4241	3.4242	3.4244	3.4246	3.4247
44 20	3.4249	3.4250	3.4252	3.4254	3.4255	3.4257	3.4259	3.4260	3.4262	3.4263
44 30	3.4265	3.4267	3.4268	3.4270	3.4272	3.4273	3.4275	3.4276	3.4278	3.4280
44 40	3.4281	3.4283	3.4285	3.4286	3.4288	3.4289	3.4291	3.4293	3.4294	3.4296
44 50	3.4298	3.4299	3.4301	3.4302	3.4304	3.4306	3.4307	3.4309	3.4310	3.4312
0 45 0	3.4314	3.4315	3.4317	3.4318	3.4320	3.4322	3.4323	3.4325	3.4326	3.4328
45 10	3.4330	3.4331	3.4333	3.4334	3.4336	3.4338	3.4339	3.4341	3.4342	3.4344
45 20	3.4346	3.4347	3.4349	3.4350	3.4352	3.4354	3.4355	3.4357	3.4358	3.4360
45 30	3.4362	3.4363	3.4365	3.4366	3.4368	3.4370	3.4371	3.4373	3.4374	3.4376
45 40	3.4378	3.4379	3.4381	3.4382	3.4384	3.4385	3.4387	3.4389	3.4390	3.4392
45 50	3.4393	3.4395	3.4396	3.4398	3.4400	3.4401	3.4403	3.4404	3.4406	3.4408
0 46 0	3.4409	3.4411	3.4412	3.4414	3.4415	3.4417	3.4419	3.4420	3.4422	3.4423
46 10	3.4425	3.4426	3.4428	3.4429	3.4431	3.4433	3.4434	3.4436	3.4437	3.4439
46 20	3.4440	3.4442	3.4444	3.4445	3.4447	3.4448	3.4450	3.4451	3.4453	3.4454
46 30	3.4456	3.4458	3.4459	3.4461	3.4462	3.4464	3.4465	3.4467	3.4468	3.4470
46 40	3.4472	3.4473	3.4475	3.4476	3.4478	3.4479	3.4481	3.4482	3.4484	3.4486
46 50	3.4487	3.4489	3.4490	3.4492	3.4493	3.4495	3.4496	3.4498	3.4499	3.4501
0 47 0	3.4502	3.4504	3.4506	3.4507	3.4509	3.4510	3.4512	3.4513	3.4515	3.4516
47 10	3.4518	3.4519	3.4521	3.4522	3.4524	3.4526	3.4527	3.4529	3.4530	3.4532
47 20	3.4533	3.4535	3.4536	3.4538	3.4539	3.4541	3.4542	3.4544	3.4545	3.4547
47 30	3.4548	3.4550	3.4551	3.4553	3.4555	3.4556	3.4558	3.4559	3.4561	3.4562
47 40	3.4564	3.4565	3.4567	3.4568	3.4570	3.4571	3.4573	3.4574	3.4576	3.4577
47 50	3.4579	3.4580	3.4582	3.4583	3.4585	3.4586	3.4588	3.4589	3.4591	3.4592
0 48 0	3 4594	3.4595	3.4597	3.4598	3.4600	3.4601	3.4603	3.4604	3.4606	3.4607
48 10	3.4609	3.4610	3.4612	3.4613	3.4615	3.4616	3.4618	3.4619	3.4621	3.4622
48 20	3.4624	3.4625	3.4627	3.4628	3.4630	3.4631	3.4633	3.4634	3.4636	3.4637
48 30	3.4639	3.4640	3.4642	3.4643	3.4645	3.4646	3.4648	3.4649	3.4651	3.4652
48 40	3.4654	3.4655	3.4657	3.4658	3.4660	3.4661	3.4663	3.4664	3.4666	3.4667
48 50	3.4669	3.4670	3.4672	3.4673	3.4675	3.4676	3.4678	3.4679	3.4681	3.4682
0 49 0	3.4683	3.4685	3.4686	3.4688	3.4689	3.4691	3.4692	3.4694	3.4695	3.4697
49 10	3.4698	3.4700	3.4701	3.4703	3.4704	3.4706	3.4707	3.4709	3.4710	3.4711
49 20	3.4713	3.4714	3.4716	3.4717	3.4719	3.4720	3.4722	3.4723	3.4725	3.4726
49 30	3.4728	3.4729	3.4730	3.4732	3 4733	3.4735	3.4736	3.4738	3.4739	3.4741
49 40	3.4742	3.4744	3.4745	3.4747	3.4748	3.4749	3.4751	3.4752	3.4754	3.4755
49 50	3.4757	3.4758	3.4760	3.4761	3.4763	3.4764	3.4765	3.4767	3.4768	3.4770

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
0° 0h. 50m. 0″ 0s.	3.4771	3.4773	3.4774	3.4776	3.4777	3.4778	3.4780	3.4781	3.4783	3.4784
50 10	3.4786	3.4787	3.4789	3.4790	3.4791	3.4793	3.4794	3.4796	3.4797	3.4799
50 20	3.4800	3.4802	3.4803	3.4804	3.4806	3.4807	3.4809	3.4810	3.4812	3.4813
50 30	3.4814	3.4816	3.4817	3.4819	3.4820	3.4822	3.4823	3.4824	3.4826	3.4827
50 40	3.4829	3.4830	3.4832	3.4833	3.4834	3.4836	3.4837	3.4839	3.4840	3.4842
50 50	3.4843	3.4844	3.4846	3.4847	3.4849	3.4850	3.4852	3.4853	3.4854	3.4856
0 51 0	3.4857	3.4859	3.4860	3.4861	3.4863	3.4864	3.4866	3.4867	3.4869	3.4870
51 10	3.4871	3.4873	3.4874	3.4876	3.4877	3.4878	3.4880	3.4881	3.4883	3.4884
51 20	3.4886	3.4887	3.4888	3.4890	3.4891	3.4893	3.4894	3.4895	3.4897	3.4898
51 30	3.4900	3.4901	3.4902	3.4904	3.4905	3.4907	3.4908	3.4909	3.4911	3.4912
51 40	3.4914	3.4915	3.4916	3.4918	3.4919	3.4921	3.4922	3.4923	3.4925	3.4926
51 50	3.4928	3.4929	3.4930	3.4932	3.4933	3.4935	3.4936	3.4937	3.4939	3.4940
0 52 0	3.4942	3.4943	3.4944	3.4946	3.4947	3.4949	3.4950	3.4951	3.4953	3.4954
52 10	3.4955	3.4957	3.4958	3.4960	3.4961	3.4962	3.4964	3.4965	3.4967	3.4968
52 20	3.4969	3.4971	3.4972	3.4973	3.4975	3.4976	3.4978	3.4979	3.4980	3.4982
52 30	3.4983	3.4984	3.4986	3.4987	3.4989	3.4990	3.4991	3.4993	3.4994	3.4995
52 40	3.4997	3.4998	3.5000	3.5001	3.5002	3.5004	3.5005	3.5006	3.5008	3.5009
52 50	3.5011	3 5012	3.5013	3.5015	3.5016	3.5017	3.5019	3.5020	3.5022	3.5023
0 53 0	3.5024	3.5026	3.5027	3.5028	3.5030	3.5031	3.5032	3.5034	3.5035	3.5037
53 10	3.5038	3.5039	3.5041	3.5042	3.5043	3.5045	3.5046	3.5047	3.5049	3.5050
53 20	3.5051	3.5053	3.5054	3.5056	3.5057	3.5058	3.5060	3.5061	3.5062	3.5064
53 30	3.5065	3.5066	3.5068	3.5069	3.5070	3.5072	3.5073	3.5075	3.5076	3.5077
53 40	3.5079	3.5080	3.5081	3.5083	3.5084	3.5085	3.5087	3.5088	3.5089	3.5091
53 50	3.5092	3.5093	3.5095	3.5096	3.5097	3.5099	3.5100	3.5101	3.5103	3 5104
0 54 0	3.5105	3.5107	3.5108	3.5109	3.5111	3.5112	3.5113	3.5115	3.5116	3.5117
54 10	3.5119	3.5120	3.5122	3.5123	3.5124	3.5126	3.5127	3.5128	3.5130	3.5131
54 20	3.5132	3.5134	3.5135	3.5136	3.5138	3.5139	3.5140	3.5141	3.5143	3.5144
54 30	3.5145	3.5147	3.5148	3.5149	3.5151	3.5152	3.5153	3.5155	3.5156	3.5157
54 40	3.5159	3.5160	3.5161	3.5163	3.5164	3.5165	3.5167	3.5168	3.5169	3.5171
54 50	3.5172	3.5173	3.5175	3.5176	3.5177	3.5179	3.5180	3.5181	3.5183	3.5184
0 55 0	3.5185	3.5186	3.5188	3.5189	3.5190	3.5192	3.5193	3.5194	3.5196	3.5197
55 10	3.5198	3.5200	3.5201	3.5202	3.5204	3.5205	3.5206	3.5207	3.5209	3.5210
55 20	3.5211	3.5213	3.5214	3.5215	3.5217	3.5218	3.5219	3.5221	3.5222	3.5223
55 30	3.5224	3.5226	3.5227	3.5228	3.5230	3.5231	3.5232	3.5234	3.5235	3.5236
55 40	3.5237	3.5239	3.5240	3.5241	3.5243	3.5244	3.5245	3.5247	3.5248	3.5249
55 50	3.5250	3.5252	3.5253	3.5254	3.5256	3.5257	3.5258	3.5260	3.5261	3.5262
0 56 0	3.5263	3.5265	3.5266	3.5267	3.5269	3.5270	3.5271	3.5272	3.5274	3.5275
56 10	3.5276	3.5278	3.5279	3.5280	3.5281	3.5283	3.5284	3.5285	3.5287	3.5288
56 20	3.5289	3.5290	3.5292	3.5293	3.5294	3.5296	3.5297	3.5298	3.5299	3.5301
56 30	3.5302	3.5303	3.5305	3.5306	3.5307	3.5308	3.5310	3.5311	3.5312	3.5314
56 40	3.5315	3.5316	3.5317	3.5319	3.5320	3.5321	3.5322	3.5324	3.5325	3.5326
56 50	3.5328	3.5329	3.5330	3.5331	3.5333	3.5334	3.5335	3.5336	3.5338	3.5339
0 57 0	3.5340	3.5342	3.5343	3.5344	3.5345	3.5347	3.5348	3.5349	3.5350	3.5352
57 10	3.5353	3.5354	3.5355	3.5357	3.5358	3.5359	3.5361	3.5362	3.5363	3.5364
57 20	3.5366	3.5367	3.5368	3.5369	3.5371	3.5372	3 5373	3.5374	3.5376	3.5377
57 30	3.5378	3.5379	3.5381	3.5382	3.5383	3.5384	3.5386	3.5387	3.5388	3.5390
57 40	3.5391	3.5392	3.5393	3.5395	3.5396	3.5397	3.5398	3.5400	3.5401	3.5402
57 50	3.5403	3.5405	3.5406	3.5407	3.5408	3.5410	3.5411	3.5412	3.5413	3.5415
0 58 0	3.5416	3.5417	3.5418	3.5420	3.5421	3.5422	3.5423	3.5425	3.5426	3.5427
58 10	3.5428	3.5429	3.5431	3.5432	3.5433	3.5434	3 5436	3.5437	3.5438	3.5439
58 20	3.5441	3.5442	3.5443	3.5444	3.5446	3.5447	3.5448	3.5449	3.5451	3.5452
58 30	3.5453	3.5454	3.5456	3.5457	3.5458	3.5459	3.5460	3.5462	3.5463	3.5464
58 40	3.5465	3.5467	3.5468	3.5469	3.5470	3.5472	3.5473	3.5474	3.5475	3.5477
58 50	3.5478	3.5479	3.5480	3.5481	3.5483	3.5484	3.5485	3 5486	3.5488	3.5489
0 59 0	3.5490	3.5491	3.5492	3.5494	3.5495	3.5496	3.5497	3.5499	3.5500	3.5501
59 10	3.5502	3.5504	3.5505	3.5506	3.5507	3.5508	3.5510	3.5511	3.5512	3.5513
59 20	3.5514	3.5516	3.5517	3.5518	3.5519	3.5521	3.5522	3.5523	3.5524	3.5525
59 30	3.5527	3.5528	3.5529	3.5530	3.5532	3.5533	3.5534	3.5535	3.5536	3.5538
59 40	3.5539	3.5540	3.5541	3.5542	3.5544	3.5545	3.5546	3.5547	3.5549	3.5550
59 50	3.5551	3.5552	3.5553	3.5555	3.5556	3.5557	3.5558	3.5559	3.5561	3.5562

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° 1h.	′ 0m.	″ 0s.	3.5563	3.5564	3.5565	3.5567	3.5568	3.5569	3.5570	3 5571	3.5573	3.5574
	0	10	3.5575	3.5576	3.5577	3.5579	3.5580	3.5581	3.5582	3.5583	3.5585	3.5586
	0	20	3.5587	3.5588	3.5589	3.5591	3.5592	3.5593	3.5594	3.5595	3.5597	3.5598
	0	30	3.5599	3.5600	3.5601	3.5603	3.5604	3.5605	3.5606	3.5607	3.5609	3.5610
	0	40	3.5611	3.5612	3.5613	3.5615	3.5616	3.5617	3.5618	3.5619	3.5621	3.5622
	0	50	3.5623	3.5624	3.5625	3.5626	3.5628	3.5629	3.5630	3.5631	3.5632	3.5634
1	1	0	3.5635	3.5636	3.5637	3.5638	3.5640	3.5641	3.5642	3.5643	3.5644	3 5645
	1	10	3.5647	3.5648	3.5649	3.5650	3.5651	3.5653	3.5654	3.5655	3.5656	3.5657
	1	20	3.5658	3.5660	3.5661	3.5662	3.5663	3.5664	3.5666	3.5667	3.5668	3.5669
	1	30	3.5670	3.5671	3.5673	3.5674	3.5675	3.5676	3.5677	3.5678	3.5680	3.5681
	1	40	3.5682	3.5683	3.5684	3.5686	3.5687	3.5688	3.5689	3.5690	3.5691	3.5693
	1	50	3.5694	3.5695	3.5696	3 5697	3.5698	3.5700	3.5701	3.5702	3.5703	3.5704
1	2	0	3.5705	3.5707	3.5708	3.5709	3.5710	3.5711	3.5712	3.5714	3.5715	3.5716
	2	10	3.5717	3.5718	3.5719	3.5721	3.5722	3.5723	3.5724	3.5725	3.5726	3 5728
	2	20	3.5729	3.5730	3.5731	3.5732	3.5733	3.5735	3.5736	3.5737	3.5738	3.5739
	2	30	3.5740	3.5741	3.5742	3.5744	3.5745	3.5746	3.5747	3.5748	3.5750	3.5751
	2	40	3.5752	3.5753	3.5754	3.5755	3.5756	3.5758	3.5759	3.5760	3.5761	3.5762
	2	50	3.5763	3.5765	3.5766	3.5767	3.5768	3.5769	3.5770	3.5771	3.5773	3.5774
1	3	0	3.5775	3.5776	3.5777	3.5778	3.5780	3.5781	3.5782	3 5783	3.5784	3.5785
	3	10	3.5786	3.5788	3.5789	3.5790	3 5791	3.5792	3.5793	3.5794	3.5796	3.5797
	3	20	3.5798	3.5799	3.5800	3.5801	3.5802	3.5804	3.5805	3.5806	3.5807	3.5808
	3	30	3.5809	3.5810	3.5812	3.5813	3.5814	3.5815	3.5816	3.5817	3.5818	3.5819
	3	40	3.5821	3.5822	3.5823	3.5824	3.5825	3.5826	3.5827	3.5829	3.5830	3.5831
	3	50	3.5832	3.5833	3.5834	3.5835	3.5837	3.5838	3.5839	3.5840	3.5841	3.5842
1	4	0	3.5843	3.5844	3.5846	3.5847	3.5848	3.5849	3.5850	3.5851	3.5852	3.5853
	4	10	3.5855	3.5856	3.5857	3.5858	3.5859	3.5860	3.5861	3.5862	3.5864	3.5865
	4	20	3.5866	3.5867	3.5868	3.5869	3.5870	3.5871	3.5873	3.5874	3.5875	3.5876
	4	30	3.5877	3.5878	3.5879	3.5880	3.5882	3.5883	3.5884	3.5885	3.5886	3.5887
	4	40	3.5888	3.5889	3.5891	3.5892	3.5893	3 5894	3.5895	3.5896	3.5897	3.5898
	4	50	3.5899	3.5901	3.5902	3.5903	3.5904	3.5905	3.5906	3.5907	3.5908	3.5910
1	5	0	3.5911	3.5912	3.5913	3.5914	3.5915	3.5916	3.5917	3.5918	3.5920	3.5921
	5	10	3.5922	3.5923	3.5924	3.5925	3.5926	3.5927	3.5928	3.5930	3.5931	3.5932
	5	20	3.5933	3.5934	3.5935	3.5936	3.5937	3.5938	3.5940	3.5941	3.5942	3.5943
	5	30	3.5944	3.5945	3.5946	3.5947	3.5948	3.5949	3.5951	3.5952	3.5953	3.5954
	5	40	3.5955	3.5956	3.5957	3.5958	3.5959	3.5960	3.5962	3.5963	3.5964	3.5965
	5	50	3.5966	3.5967	3.5968	3.5969	3.5970	3.5971	3.5973	3.5974	3.5975	3.5976
1	6	0	3.5977	3.5978	3.5979	3.5980	3.5981	3.5982	3.5984	3.5985	3.5986	3.5987
	6	10	3.5988	3.5989	3.5990	3.5991	3.5992	3.5993	3.5994	3.5996	3.5997	3.5998
	6	20	3.5999	3.6000	3.6001	3.6002	3.6003	3.6004	3.6005	3.6006	3.6008	3.6009
	6	30	3.6010	3.6011	3.6012	3.6013	3.6014	3.6015	3.6016	3.6017	3.6018	3.6020
	6	40	3.6021	3.6022	3.6023	3.6024	3.6025	3.6026	3.6027	3.6028	3.6029	3.6030
	6	50	3.6031	3.6033	3.6034	3.6035	3.6036	3.6037	3.6038	3.6039	3.6040	3.6041
1	7	0	3.6042	3.6043	3.6044	3.6046	3.6047	3.6048	3.6049	3.6050	3.6051	3.6052
	7	10	3.6053	3.6054	3.6055	3.6056	3.6057	3.6058	3.6060	3.6061	3.6062	3.6063
	7	20	3.6064	3.6065	3.6066	3.6067	3.6068	3.6069	3.6070	3.6071	3.6072	3.6073
	7	30	3.6075	3.6076	3.6077	3.6078	3.6079	3.6080	3.6081	3.6082	3.6083	3.6084
	7	40	3.6085	3.6086	3.6087	3.6088	3.6090	3.6091	3.6092	3.6093	3.6094	3.6095
	7	50	3.6096	3.6097	3.6098	3.6099	3.6100	3.6101	3.6102	3.6103	3.6104	3.6106
1	8	0	3.6107	3.6108	3.6109	3.6110	3.6111	3.6112	3.6113	3.6114	3.6115	3.6116
	8	10	3.6117	3.6118	3.6119	3.6120	3.6121	3.6123	3.6124	3.6125	3.6126	3.6127
	8	20	3.6128	3.6129	3.6130	3.6131	3.6132	3.6133	3.6134	3.6135	3.6136	3.6137
	8	30	3.6138	3.6139	3.6141	3.6142	3.6143	3.6144	3.6145	3.6146	3.6147	3.6148
	8	40	3.6149	3.6150	3.6151	3.6152	3.6153	3.6154	3.6155	3.6156	3.6157	3.6158
	8	50	3.6160	3.6161	3.6162	3.6163	3.6164	3.6165	3.6166	3.6167	3.6168	3.6169
1	9	0	3.6170	3.6171	3.6172	3.6173	3.6174	3.6175	3.6176	3.6177	3.6178	3.6179
	9	10	3.6180	3.6182	3.6183	3.6184	3.6185	3.6186	3.6187	3.6188	3.6189	3.6190
	9	20	3.6191	3.6192	3.6193	3.6194	3.6195	3.6196	3.6197	3.6198	3.6199	3.6200
	9	30	3.6201	3.6202	3.6203	3.6204	3.6206	3.6207	3.6208	3.6209	3.6210	3.6211
	9	40	3.6212	3.6213	3.6214	3.6215	3.6216	3.6217	3.6218	3.6219	3.6220	3.6221
	9	50	3.6222	3.6223	3.6224	3.6225	3.6226	3.6227	3.6228	3.6229	3.6230	3.6231

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	$0''$	$1''$	$2''$	$3''$	$4''$	$5''$	$6''$	$7''$	$8''$	$9''$
$\overset{\circ}{1}{}^{h.}\ \overset{\prime}{10}{}^{m.}\ \overset{\prime\prime}{0}{}^{s.}$	3.6232	3.6234	3.6235	3.6236	3.6237	3.6238	3.6239	3.6240	3.6241	3.6242
10 10	3.6243	3.6244	3.6245	3.6246	3.6247	3.6248	3.6249	3.6250	3.6251	3.6252
10 20	3.6253	3.6254	3.6255	3.6256	3.6257	3.6258	3.6259	3.6260	3.6261	3.6262
10 30	3.6263	3.6264	3.6265	3.6266	3.6268	3.6269	3.6270	3.6271	3.6272	3.6273
10 40	3.6274	3.6275	3.6276	3.6277	3.6278	3.6279	3.6280	3.6281	3.6282	3.6283
10 50	3.6284	3.6285	3.6286	3.6287	3.6288	3.6289	3.6290	3.6291	3.6292	3.6293
1 11 0	3.6294	3.6295	3.6296	3.6297	3.6298	3.6299	3.6300	3.6301	3.6302	3.6303
11 10	3.6304	3.6305	3.6306	3.6307	3.6308	3.6309	3.6310	3.6311	3 6312	3.6313
11 20	3.6314	3.6315	3.6316	3.6317	3.6318	3.6320	3.6321	3.6322	3.6323	3.6324
11 30	3.6325	3.6326	3.6327	3.6328	3.6329	3.6330	3.6331	3.6332	3.6333	3.6334
11 40	3.6335	3.6336	3.6337	3.6338	3.6339	3.6340	3.6341	3.6342	3.6343	3.6344
11 50	3.6345	3.6346	3.6347	3.6348	3.6349	3.6350	3.6351	3.6352	3.6353	3.6354
1 12 0	3.6355	3.6356	3.6357	3.6358	3.6359	3.6360	3.6361	3.6362	3.6363	3.6364
12 10	3.6365	3.6366	3.6367	3.6368	3.6369	3.6370	3.6371	3.6372	3.6373	3.6374
12 20	3.6375	3.6376	3.6377	3.6378	3.6379	3.6380	3.6381	3.6382	3.6383	3.6384
12 30	3.6385	3.6386	3.6387	3.6388	3.6389	3.6390	3.6391	3.6392	3.6393	3.6394
12 40	3.6395	3.6396	3.6397	3.6398	3.6399	3.6400	3.6401	3.6402	3.6403	3.6404
12 50	3.6405	3.6406	3.6407	3.6408	3.6409	3.6410	3.6411	3.6412	3.6413	3.6414
1 13 0	3.6415	3.6416	3.6417	3.6418	3.6419	3.6420	3.6421	3.6422	3.6423	3.6424
13 10	3.6425	3.6426	3.6427	3.6428	3.6429	3.6430	3.6431	3.6432	3.6433	3.6434
13 20	3.6435	3.6436	3.6437	3.6437	3.6438	3.6439	3.6440	3.6441	3.6442	3.6443
13 30	3.6444	3.6445	3.6446	3.6447	3.6448	3.6449	3.6450	3.6451	3.6452	3.6453
13 40	3.6454	3.6455	3.6456	3.6457	3.6458	3.6459	3.6460	3.6461	3.6462	3.6463
13 50	3.6464	3.6465	3.6466	3.6467	3.6468	3.6469	3.6470	3.6471	3.6472	3.6473
1 14 0	3.6474	3.6475	3.6476	3.6477	3.6478	3.6479	3.6480	3.6481	3.6482	3.6483
14 10	3.6484	3.6485	3.6486	3.6487	3.6488	3.6488	3.6489	3.6490	3.6491	3.6492
14 20	3.6493	3.6494	3.6495	3.6496	3.6497	3.6498	3.6499	3.6500	3.6501	3.6502
14 30	3.6503	3.6504	3.6505	3.6506	3.6507	3.6508	3.6509	3.6510	3.6511	3.6512
14 40	3.6513	3.6514	3.6515	3.6516	3.6517	3.6518	3.6519	3.6520	3.6521	3.6521
14 50	3.6522	3.6523	3.6524	3.6525	3.6526	3.6527	3.6528	3.6529	3.6530	3.6531
1 15 0	3.6532	3.6533	3.6534	3.6535	3.6536	3.6537	3.6538	3.6539	3.6540	3.6541
15 10	3.6542	3.6543	3.6544	3.6545	3.6546	3.6547	3.6548	3.6549	3.6549	3.6550
15 20	3.6551	3.6552	3.6553	3.6554	3.6555	3.6556	3.6557	3.6558	3.6559	3.6560
15 30	3.6561	3.6562	3.6563	3.6564	3.6565	3.6566	3.6567	3.6568	3.6569	3.6570
15 40	3.6571	3.6572	3.6572	3.6573	3.6574	3.6575	3.6576	3.6577	3.6578	3.6579
15 50	3.6580	3.6581	3.6582	3.6583	3.6584	3.6585	3.6586	3.6587	3.6588	3.6589
1 16 0	3.6590	3.6591	3.6592	3.6593	3.6593	3.6594	3.6595	3.6596	3.6597	3.6598
16 10	3.6599	3.6600	3.6601	3.6602	3.6603	3.6604	3.6605	3.6606	3.6607	3.6608
16 20	3.6609	3.6610	3.6611	3.6611	3.6612	3.6613	3.6614	3.6615	3.6616	3.6617
16 30	3.6618	3.6619	3.6620	3.6621	3.6622	3.6623	3.6624	3.6625	3.6626	3.6627
16 40	3.6628	3.6629	3.6629	3.6630	3.6631	3 6632	3.6633	3.6634	3.6635	3.6636
16 50	3.6637	3.6638	3.6639	3.6640	3.6641	3.6642	3.6643	3.6644	3.6645	3.6645
1 17 0	3.6646	3.6647	3.6648	3.6649	3.6650	3.6651	3.6652	3.6653	3.6654	3.6655
17 10	3.6656	3.6657	3.6658	3.6659	3.6660	3.6660	3.6661	3.6662	3.6663	3.6664
17 20	3.6665	3.6666	3.6667	3.6668	3.6669	3.6670	3.6671	3.6672	3.6673	3.6674
17 30	3.6675	3.6675	3.6676	3.6677	3.6678	3.6679	3.6680	3.6681	3.6682	3.6683
17 40	3.6684	3.6685	3.6686	3.6687	3.6688	3.6689	3.6689	3.6690	3.6691	3.6692
17 50	3.6693	3.6694	3.6695	3.6696	3.6697	3.6698	3.6699	3.6700	3.6701	3.6702
1 18 0	3.6702	3.6703	3.6704	3.6705	3.6706	3.6707	3.6708	3.6709	3.6710	3.6711
18 10	3.6712	3.6713	3.6714	3.6715	3.6715	3.6716	3.6717	3.6718	3.6719	3.6720
18 20	3.6721	3.6722	3.6723	3.6724	3.6725	3.6726	3.6727	3.6727	3.6728	3.6729
18 30	3.6730	3.6731	3.6732	3.6733	3.6734	3.6735	3.6736	3.6737	3.6738	3.6738
18 40	3.6739	3.6740	3.6741	3.6742	3.6743	3.6744	3.6745	3.6746	3.6747	3.6748
18 50	3.6749	3.6750	3.6750	3.6751	3.6752	3.6753	3.6754	3.6755	3.6756	3.6757
1 19 0	3.6758	3.6759	3.6760	3.6761	3.6761	3.6762	3.6763	3.6764	3.6765	3.6766
19 10	3.6767	3.6768	3.6769	3.6770	3.6771	3.6772	3.6772	3.6773	3.6774	3.6775
19 20	3.6776	3.6777	3.6778	3.6779	3.6780	3.6781	3.6782	3.6782	3.6783	3.6784
19 30	3.6785	3.6786	3.6787	3.6788	3.6789	3.6790	3.6791	3.6792	3.6792	3.6793
19 40	3.6794	3.6795	3 6796	3.6797	3.6798	3.6799	3.6800	3.6801	3.6802	3.6802
19 50	3.6803	3.6804	3.6805	3.6806	3.6807	3.6808	3.6809	3.6810	3.6811	3.6812

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
°	′	″										
1h.	20m.	0s.	3.6812	3.6813	3.6814	3.6815	3.6816	3.6817	3.6818	3.6819	3.6820	3.6821
	20	10	3.6821	3.6822	3.6823	3.6824	3.6825	3.6826	3.6827	3.6828	3.6829	3.6830
	20	20	3.6830	3.6831	3.6832	3.6833	3.6834	3.6835	3.6836	3.6837	3.6838	3.6839
	20	30	3.6839	3.6840	3.6841	3.6842	3.6843	3.6844	3.6845	3.6846	3.6847	3.6848
	20	40	3.6848	3.6849	3.6850	3.6851	3.6852	3.6853	3.6854	3.6855	3.6856	3.6857
	20	50	3.6857	3.6858	3.6859	3.6860	3.6861	3.6862	3.6863	3.6864	3.6865	3.6865
1	21	0	3.6866	3.6867	3.6868	3.6869	3.6870	3.6871	3.6872	3.6873	3.6874	3.6874
	21	10	3.6875	3.6876	3.6877	3.6878	3.6879	3.6880	3.6881	3.6882	3.6882	3.6883
	21	20	3.6884	3.6885	3.6886	3.6887	3.6888	3.6889	3.6890	3.6890	3.6891	3.6892
	21	30	3.6893	3.6894	3.6895	3.6896	3.6897	3.6898	3.6898	3.6899	3.6900	3.6901
	21	40	3.6902	3.6903	3.6904	3.6905	3.6906	3.6906	3.6907	3.6908	3.6909	3.6910
	21	50	3.6911	3.6912	3.6913	3.6913	3.6914	3.6915	3.6916	3.6917	3.6918	3.6919
1	22	0	3.6920	3.6921	3.6921	3.6922	3.6923	3.6924	3.6925	3.6926	3.6927	3.6928
	22	10	3.6928	3.6929	3.6930	3.6931	3.6932	3.6933	3.6934	3.6935	3.6936	3.6936
	22	20	3.6937	3.6938	3.6939	3.6940	3.6941	3.6942	3.6943	3.6943	3.6944	3.6945
	22	30	3.6946	3.3947	3.6948	3.6949	3.6950	3.6950	3.6951	3.6952	3.6953	3.6954
	22	40	3.6955	3.6956	3.6957	3.6957	3.6958	3.6959	3.6960	3.6961	3.6962	3.6963
	22	50	3.6964	3.6964	3.6965	3.6966	3.6967	3.6968	3.6969	3.6970	3.6971	3.6971
1	23	0	3.6972	3.6973	3.6974	3.6975	3.6976	3.6977	3.6978	3.6978	3.6979	3.6980
	23	10	3.6981	3.6982	3.6983	3.6984	3.6984	3.6985	3.6986	3.6987	3.6988	3.6989
	23	20	3.6990	3.6991	3.6991	3.6992	3.6993	3.6994	3.6995	3.6996	3.6997	3.6998
	23	30	3.6998	3.6999	3.7000	3.7001	3.7002	3.7003	3.7004	3.7004	3.7005	3.7006
	23	40	3.7007	3.7008	3.7009	3.7010	3.7010	3.7011	3.7012	3.7013	3.7014	3.7015
	23	50	3.7016	3.7017	3.7017	3.7018	3.7019	3.7020	3.7021	3.7022	3.7023	3.7023
1	24	0	3.7024	3.7025	3.7026	3.7027	3.7028	3.7029	3.7029	3.7030	3.7031	3.7032
	24	10	3.7033	3.7034	3.7035	3.7035	3.7036	3.7037	3.7038	3.7039	3.7040	3.7041
	24	20	3.7042	3.7042	3.7043	3.7044	3.7045	3.7046	3.7047	3.7048	3.7048	3.7049
	24	30	3.7050	3.7051	3.7052	3.7053	3.7054	3.7054	3.7055	3.7056	3.7057	3.7058
	24	40	3.7059	3.7060	3.7060	3.7061	3.7062	3.7063	3.7064	3.7065	3.7065	3.7066
	24	50	3.7067	3.7068	3.7069	3.7070	3.7071	3 7071	3.7072	3.7073	3.7074	3.7075
1	25	0	3.7076	3.7077	3.7077	3.7078	3.7079	3.7080	3.7081	3.7082	3.7083	3.7083
	25	10	3.7084	3.7085	3.7086	3.7087	3.7088	3.7088	3.7089	3.7090	3.7091	3.7092
	25	20	3.7093	3.7094	3.7094	3.7095	3.7096	3.7097	3.7098	3.7099	3.7099	3.7100
	25	30	3.7101	3.7102	3.7103	3.7104	3.7105	3.7105	3.7106	3.7107	3.7108	3.7109
	25	40	3.7110	3.7110	3.7111	3.7112	3.7113	3.7114	3.7115	3.7116	3.7116	3.7117
	25	50	3.7118	3.7119	3.7120	3.7121	3.7121	3.7122	3.7123	3.7124	3.7125	3.7126
1	26	0	3.7126	3.7127	3.7128	3.7129	3.7130	3.7131	3.7132	3.7132	3.7133	3.7134
	26	10	3.7135	3.7136	3.7137	3.7137	3.7138	3.7139	3.7140	3.7141	3.7142	3.7142
	26	20	3.7143	3.7144	3.7145	3.7146	3.7147	3.7147	3.7148	3.7149	3.7150	3.7151
	26	30	3.7152	3.7153	3.7153	3.7154	3.7155	3.7156	3.7157	3.7158	3.7159	3.7159
	26	40	3.7160	3.7161	3.7162	3.7163	3.7163	3.7164	3.7165	3.7166	3.7167	3.7168
	26	50	3.7168	3.7169	3.7170	3.7171	3.7172	3.7173	3.7173	3.7174	3.7175	3.7176
1	27	0	3.7177	3.7178	3.7178	3.7179	3.7180	3.7181	3.7182	3.7183	3.7183	3.7184
	27	10	3.7185	3.7186	3.7187	3.7188	3.7188	3.7189	3.7190	3.7191	3.7192	3.7192
	27	20	3.7193	3.7194	3.7195	3.7196	3.7197	3.7197	3 7198	3.7199	3.7200	3.7201
	27	30	3.7202	3.7202	3.7203	3.7204	3.7205	3.7206	3.7207	3.7207	3.7208	3.7209
	27	40	3.7210	3.7211	3.7212	3.7212	3.7213	3.7214	3.7215	3.7216	3.7216	3.7217
	27	50	3.7218	3.7219	3.7220	3.7221	3.7221	3.7222	3.7223	3.7224	3.7225	3.7226
1	28	0	3.7226	3.7227	3.7228	3.7229	3.7230	3.7230	3.7231	3.7232	3.7233	3.7234
	28	10	3.7235	3.7235	3.7236	3.7237	3.7238	3.7239	3 7239	3.7240	3.7241	3.7242
	28	20	3.7243	3.7244	3.7244	3.7245	3.7246	3.7247	3.7248	3.7248	3.7249	3.7250
	28	30	3.7251	3.7252	3.7253	3.7253	3.7254	3.7255	3.7256	3.7257	3.7257	3.7258
	28	40	3.7259	3.7260	3.7261	3.7262	3.7262	3.7263	3.7264	3.7265	3.7266	3.7266
	28	50	3.7267	3.7268	3.7269	3.7270	3.7271	3.7271	3.7272	3 7273	3.7274	3.7275
1	29	0	3.7275	3.7276	3.7277	3.7278	3.7279	3.7279	3.7280	3.7281	3.7282	3.7283
	29	10	3.7284	3.7284	3.7285	3.7286	3.7287	3.7288	3.7288	3.7289	3.7290	3.7291
	29	20	3.7292	3.7292	3.7293	3.7294	3.7295	3.7296	3.7297	3.7297	3.7298	3.7299
	29	30	3.7300	3.7301	3.7301	3.7302	3.7303	3.7304	3.7305	3.7305	3.7306	3.7307
	29	40	3.7308	3.7309	3.7309	3.7310	3.7311	3.7312	3.7313	3.7313	3.7314	3.7315
	29	50	3.7316	3.7317	3.7317	3.7318	3.7319	3.7320	3.7321	3.7322	3.7322	3.7323

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
1° 30′ 0″ 1h 30m 0s	3.7324	3.7325	3.7326	3.7326	3.7327	3.7328	3.7329	3.7330	3.7330	3.7331
30 10	3.7332	3.7333	3.7334	3.7334	3.7335	3.7336	3.7337	3.7338	3.7338	3.7339
30 20	3.7340	3.7341	3.7342	3.7342	3.7343	3.7344	3.7345	3.7346	3.7346	3.7347
30 30	3.7348	3.7349	3.7350	3.7350	3.7351	3.7352	3.7353	3.7354	3.7354	3.7355
30 40	3.7356	3.7357	3.7358	3.7358	3.7359	3.7360	3.7361	3.7362	3.7362	3.7363
30 50	3.7364	3.7365	3.7366	3.7366	3.7367	3.7368	3.7369	3.7370	3.7370	3.7371
1 31 0	3.7372	3.7373	3.7374	3.7374	3.7375	3.7376	3.7377	3.7377	3.7378	3.7379
31 10	3.7380	3.7381	3.7381	3.7382	3.7383	3.7384	3.7385	3.7385	3.7386	3.7387
31 20	3.7388	3.7389	3.7389	3.7390	3.7391	3.7392	3.7393	3.7393	3.7394	3.7395
31 30	3.7396	3.7397	3.7397	3.7398	3.7399	3.7400	3.7400	3.7401	3.7402	3.7403
31 40	3.7404	3.7404	3.7405	3.7406	3.7407	3.7408	3.7408	3.7409	3.7410	3.7411
31 50	3.7412	3.7412	3.7413	3.7414	3.7415	3.7415	3.7416	3.7417	3.7418	3.7419
1 32 0	3.7419	3.7420	3.7421	3.7422	3.7423	3.7423	3.7424	3.7425	3.7426	3.7426
32 10	3.7427	3.7428	3.7429	3.7430	3.7430	3.7431	3.7432	3.7433	3.7434	3.7434
32 20	3.7435	3.7436	3.7437	3.7437	3.7438	3.7439	3.7440	3.7441	3.7441	3.7442
32 30	3.7443	3.7444	3.7444	3.7445	3.7446	3.7447	3.7448	3.7448	3.7449	3.7450
32 40	3.7451	3.7452	3.7452	3.7453	3.7454	3.7455	3.7455	3.7456	3.7457	3.7458
32 50	3.7459	3.7459	3.7460	3.7461	3.7462	3.7462	3.7463	3.7464	3.7465	3.7466
1 33 0	3.7466	3.7467	3 7468	3.7469	3.7469	3.7470	3.7471	3.7472	3.7473	3.7473
33 10	3.7474	3.7475	3.7476	3.7476	3.7477	3.7478	3.7479	3.7480	3.7480	3.7481
33 20	3.7482	3.7483	3.7483	3.7484	3.7485	3.7486	3.7487	3.7487	3.7488	3.7489
33 30	3.7490	3.7490	3.7491	3.7492	3.7493	3.7493	3.7494	3.7495	3.7496	3.7497
33 40	3.7497	3.7498	3.7499	3.7500	3.7500	3.7501	3.7502	3.7503	3.7504	3.7504
33 50	3.7505	3.7506	3.7507	3.7507	3.7508	3.7509	3.7510	3.7510	3.7511	3.7512
1 34 0	3.7513	3.7514	3.7514	3.7515	3.7516	3.7517	3.7517	3.7518	3.7519	3.7520
34 10	3.7520	3.7521	3.7522	3.7523	3.7524	3.7524	3.7525	3.7526	3.7527	3.7527
34 20	3.7528	3.7529	3.7530	3.7530	3.7531	3.7532	3.7533	3.7534	3.7534	3.7535
34 30	3.7536	3.7537	3.7537	3.7538	3.7539	3.7540	3.7540	3.7541	3.7542	3.7543
34 40	3.7543	3.7544	3.7545	3.7546	3.7547	3.7547	3.7548	3.7549	3.7550	3.7550
34 50	3.7551	3.7552	3.7553	3.7553	3.7554	3.7555	3.7556	3.7556	3.7557	3.7558
1 35 0	3.7559	3.7560	3.7560	3.7561	3.7562	3.7563	3.7563	3.7564	3.7565	3.7566
35 10	3.7566	3.7567	3.7568	3.7569	3.7569	3.7570	3.7571	3.7572	3.7572	3.7573
35 20	3.7574	3.7575	3.7575	3.7576	3.7577	3.7578	3.7579	3.7579	3.7580	3.7581
35 30	3.7582	3.7582	3.7583	3.7584	3.7585	3.7585	3.7586	3.7587	3.7588	3.7588
35 40	3.7589	3.7590	3.7591	3.7591	3.7592	3.7593	3.7594	3.7594	3.7595	3.7596
35 50	3.7597	3.7597	3.7598	3.7599	3.7600	3.7600	3.7601	3.7602	3.7603	3.7603
1 36 0	3.7604	3.7605	3.7606	3.7606	3.7607	3.7608	3.7609	3.7609	3.7610	3.7611
36 10	3.7612	3.7613	3.7613	3.7614	3.7615	3.7616	3.7616	3.7617	3.7618	3.7619
36 20	3.7619	3.7620	3.7621	3.7622	3.7622	3.7623	3.7624	3.7625	3.7625	3.7626
36 30	3.7627	3.7628	3.7628	3.7629	3.7630	3.7631	3.7631	3.7632	3.7633	3.7634
36 40	3.7634	3.7635	3.7636	3.7637	3.7637	3.7638	3.7639	3.7640	3.7640	3 7641
36 50	3.7642	3.7643	3.7643	3.7644	3.7645	3.7645	3.7646	3.7647	3.7648	3.7648
1 37 0	3.7649	3.7650	3.7651	3.7651	3.7652	3.7653	3.7654	3.7654	3.7655	3.7656
37 10	3.7657	3.7657	3.7658	3.7659	3.7660	3.7660	3.7661	3.7662	3.7663	3.7663
37 20	3.7664	3.7665	3.7666	3.7666	3.7667	3.7668	3.7669	3.7669	3.7670	3.7671
37 30	3.7672	3.7672	3.7673	3.7674	3.7675	3.7675	3.7676	3.7677	3.7677	3.7678
37 40	3.7679	3.7680	3.7681	3.7681	3.7682	3.7683	3.7683	3.7684	3.7685	3.7686
37 50	3.7686	3.7687	3.7688	3.7689	3.7689	3.7690	3.7691	3.7692	3.7692	3.7693
1 38 0	3.7694	3.7695	3.7695	3.7696	3.7697	3.7697	3.7698	3.7699	3.7700	3.7700
38 10	3.7701	3.7702	3.7703	3.7703	3.7704	3.7705	3.7706	3.7706	3.7707	3.7708
38 20	3.7709	3.7709	3.7710	3.7711	3.7711	3.7712	3.7713	3.7714	3.7714	3.7715
38 30	3.7716	3.7717	3.7717	3.7718	3.7719	3.7720	3.7720	3.7721	3.7722	3.7722
38 40	3.7723	3.7724	3.7725	3.7725	3.7726	3.7727	3.7728	3.7728	3.7729	3.7730
38 50	3.7731	3.7731	3.7732	3.7733	3.7733	3.7734	3.7735	3.7736	3.7736	3.7737
1 39 0	3.7738	3.7739	3.7739	3.7740	3.7741	3.7742	3.7742	3.7743	3.7744	3.7744
39 10	3.7745	3.7746	3.7747	3.7747	3.7748	3.7749	3.7750	3.7750	3.7751	3.7752
39 20	3.7752	3.7753	3.7754	3.7755	3.7755	3.7756	3.7757	3.7758	3.7758	3.7759
39 30	3.7760	3.7760	3.7761	3.7762	3.7763	3.7763	3.7764	3.7765	3.7766	3.7766
39 40	3.7767	3.7768	3.7768	3.7769	3.7770	3.7771	3.7771	3.7772	3.7773	3.7774
39 50	3.7774	3.7775	3.7776	3.7776	3.7777	3.7778	3.7779	3.7779	3.7780	3.7781

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8′	9″
1h. 40m. 0s.	3.7782	3.7782	3.7783	3.7784	3.7784	3.7785	3.7786	3.7787	3.7787	3.7788
40 10	3.7789	3.7789	3.7790	3.7791	3.7792	3.7792	3.7793	3.7794	3.7795	3.7795
40 20	3.7796	3.7797	3.7797	3.7798	3.7799	3.7800	3.7800	3.7801	3.7802	3.7802
40 30	3.7803	3.7804	3.7805	3.7805	3.7806	3.7807	3.7807	3.7808	3.7809	3.7810
40 40	3.7810	3.7811	3.7812	3.7813	3.7813	3.7814	3.7815	3.7815	3.7816	3.7817
40 50	3.7818	3.7818	3.7819	3.7820	3.7820	3.7821	3.7822	3.7823	3.7823	3.7824
1 41 0	3.7825	3.7825	3.7826	3.7827	3.7828	3.7828	3.7829	3.7830	3.7830	3.7831
41 10	3.7832	3.7833	3.7833	3.7834	3.7835	3.7835	3.7836	3.7837	3.7838	3.7838
41 20	3.7839	3.7840	3.7840	3.7841	3.7842	3.7843	3.7843	3.7844	3.7845	3.7845
41 30	3.7846	3.7847	3.7848	3.7848	3.7849	3.7850	3.7850	3.7851	3.7852	3.7853
41 40	3.7853	3.7854	3.7855	3.7855	3.7856	3.7857	3.7858	3.7858	3.7859	3.7860
41 50	3.7860	3.7861	3.7862	3.7863	3.7863	3.7864	3.7865	3.7865	3.7866	3.7867
1 42 0	3.7868	3.7868	3.7869	3.7870	3.7870	3.7871	3.7872	3.7872	3.7873	3.7874
42 10	3.7875	3.7875	3.7876	3.7877	3.7877	3.7878	3.7879	3.7880	3.7880	3.7881
42 20	3.7882	3.7882	3.7883	3.7884	3.7885	3.7885	3.7886	3.7887	3.7887	3.7888
42 30	3.7889	3.7889	3.7890	3.7891	3.7892	3.7892	3.7893	3.7894	3.7894	3.7895
42 40	3.7896	3.7897	3.7897	3.7898	3.7899	3.7899	3.7900	3.7901	3.7901	3.7902
42 50	3.7903	3.7904	3.7904	3.7905	3.7906	3.7906	3.7907	3.7908	3.7908	3.7909
1 43 0	3.7910	3.7911	3.7911	3.7912	3.7913	3.7913	3.7914	3.7915	3.7916	3.7916
43 10	3.7917	3.7918	3.7918	3.7919	3.7920	3.7920	3.7921	3.7922	3.7923	3.7923
43 20	3.7924	3.7925	3.7925	3.7926	3.7927	3.7927	3.7928	3.7929	3.7930	3.7930
43 30	3.7931	3.7932	3.7932	3.7933	3.7934	3.7934	3.7935	3.7936	3.7937	3.7937
43 40	3.7938	3.7939	3.7939	3.7940	3.7941	3.7941	3.7942	3.7943	3.7943	3.7944
43 50	3.7945	3.7946	3.7946	3.7947	3.7948	3.7948	3.7949	3.7950	3.7950	3.7951
1 44 0	3.7952	3.7953	3.7953	3.7954	3.7955	3.7955	3.7956	3.7957	3.7957	3.7958
44 10	3.7959	3.7959	3.7960	3.7961	3.7962	3.7962	3.7963	3.7964	3.7964	3.7965
44 20	3.7966	3.7966	3.7967	3.7968	3.7969	3.7969	3.7970	3.7971	3.7971	3.7972
44 30	3.7973	3.7973	3.7974	3.7975	3.7975	3.7976	3.7977	3.7978	3.7978	3.7979
44 40	3.7980	3.7980	3.7981	3.7982	3.7982	3.7983	3.7984	3.7984	3.7985	3.7986
44 50	3.7987	3.7987	3.7988	3.7989	3.7989	3.7990	3.7991	3.7991	3.7992	3.7993
1 45 0	3.7993	3.7994	3.7995	3.7995	3.7996	3.7997	3.7998	3.7998	3.7999	3.8000
45 10	3.8000	3.8001	3.8002	3.8002	3.8003	3.8004	3.8004	3.8005	3.8006	3.8006
45 20	3.8007	3.8008	3.8009	3.8009	3.8010	3.8011	3.8011	3.8012	3.8013	3.8013
45 30	3.8014	3.8015	3.8015	3.8016	3.8017	3.8017	3.8018	3.8019	3.8020	3.8020
45 40	3.8021	3.8022	3.8022	3.8023	3.8024	3.8024	3.8025	3.8026	3.8026	3.8027
45 50	3.8028	3.8028	3.8029	3.8030	3.8030	3.8031	3.8032	3.8033	3.8033	3.8034
1 46 0	3.8035	3.8035	3.8036	3.8036	3.8037	3.8038	3.8039	3.8039	3.8040	3.8041
46 10	3.8041	3.8042	3.8043	3.8043	3.8044	3.8045	3.8045	3.8046	3.8047	3.8048
46 20	3.8048	3.8049	3.8050	3.8050	3.8051	3.8052	3.8052	3.8053	3.8054	3.8054
46 30	3.8055	3.8056	3.8056	3.8057	3.8058	3.8058	3.8059	3.8060	3.8060	3.8061
46 40	3.8062	3.8062	3.8063	3.8064	3.8065	3.8065	3.8066	3.8067	3.8067	3.8068
46 50	3.8069	3.8069	3.8070	3.8071	3.8071	3.8072	3.8073	3.8073	3.8074	3.8075
1 47 0	3.8075	3.8076	3.8077	3.8077	3.8078	3.8079	3.8079	3.8080	3.8081	3.8081
47 10	3.8082	3.8083	3.8083	3.8084	3.8085	3.8085	3.8086	3.8087	3.8088	3.8088
47 20	3.8089	3.8090	3.8090	3.8091	3.8092	3.8092	3.8093	3.8094	3.8094	3.8095
47 30	3.8096	3.8096	3.8097	3.8098	3.8098	3.8099	3.8099	3.8100	3.8101	3.8102
47 40	3.8102	3.8103	3.8104	3.8104	3.8105	3.8106	3.8106	3.8107	3.8108	3.8108
47 50	3.8109	3.8110	3.8110	3.8111	3.8112	3.8112	3.8113	3.8114	3.8114	3.8115
1 48 0	3.8116	3.8116	3.8117	3.8118	3.8118	3.8119	3.8120	3.8120	3.8121	3.8122
48 10	3.8122	3.8123	3.8124	3.8124	3.8125	3.8126	3.8126	3.8127	3.8128	3.8128
48 20	3.8129	3.8130	3.8130	3.8131	3.8132	3.8132	3.8133	3.8134	3.8134	3.8135
48 30	3.8136	3.8136	3.8137	3.8138	3.8138	3.8139	3.8140	3.8140	3.8141	3.8142
48 40	3.8142	3.8143	3.8144	3.8144	3.8145	3.8146	3.8146	3.8147	3.8148	3.8148
48 50	3.8149	3.8150	3.8150	3.8151	3.8152	3.8152	3.8153	3.8154	3.8154	3.8155
1 49 0	3.8156	3.8156	3.8157	3.8158	3.8158	3.8159	3.8160	3.8160	3.8161	3.8162
49 10	3.8162	3.8163	3.8164	3.8164	3.8165	3.8166	3.8166	3.8167	3.8168	3.8168
49 20	3.8169	3.8170	3.8170	3.8171	3.8172	3.8172	3.8173	3.8174	3.8174	3.8175
49 30	3.8176	3.8176	3.8177	3.8178	3.8178	3.8179	3.8180	3.8180	3.8181	3.8182
49 40	3.8182	3.8183	3.8184	3.8184	3.8185	3.8185	3.8186	3.8187	3.8188	3.8188
49 50	3.8189	3.8190	3.8190	3.8191	3.8191	3.8192	3.8193	3.8193	3.8194	3.8195

TABLE I

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3′	4″	5	6″	7″	8″	9″
° ′ ″ 1h. 50m. 0s.	3.8195	3.8196	3.8197	3.8197	3.8198	3.8199	3.8199	3.8200	3.8201	3.8201
50 10	3.8202	3.8203	3.8203	3.8204	3.8205	3.8205	3.8206	3.8207	3.8207	3.8208
50 20	3.8209	3.8209	3.8210	3.8211	3 8211	3.8212	3.8213	3.8213	3.8214	3.8214
50 30	3.8215	3.8216	3.8216	3.8217	3.8218	3.8218	3.8219	3.8220	3.8220	3.8221
50 40	3.8222	3.8222	3.8223	3.8224	3.8224	3.8225	3.8226	3.8226	3.8227	3.8228
50 50	3.8228	3.8229	3.8230	3.8230	3.8231	3.8231	3.8232	3.8233	3.8233	3.8234
1 51 0	3.8235	3.8235	3.8236	3.8237	3.8237	3.8238	3.8239	3.8239	3 8240	3.8241
51 10	3.8241	3.8242	3.8243	3.8243	3.8244	3.8245	3.8245	3.8246	3.8246	3.8247
51 20	3.8248	3.8248	3.8249	3.8250	3.8250	3.8251	3.8252	3.8252	3.8253	3.8254
51 30	3.8254	3.8255	3.8256	3.8256	3.8257	3.8258	3.8258	3.8259	3.8259	3.8260
51 40	3.8261	3.8261	3.8262	3.8263	3.8263	3.8264	3.8265	3.8265	3.8266	3.8267
51 50	3.8267	3.8268	3.8269	3.8269	3.8270	3.8270	3.8271	3.8272	3.8272	3.8273
1 52 0	3.8274	3.8274	3.8275	3.8276	3.8276	3.8277	3.8278	3.8278	3.8279	3.8280
52 10	3.8280	3.8281	3.8281	3.8282	3.8283	3.8283	3.8284	3.8285	3.8285	3.8286
52 20	3.8287	3.8287	3.8288	3.8289	3.8289	3.8290	3.8290	3.8291	3.8292	3.8292
52 30	3.8293	3.8294	3.8294	3.8295	3.8296	3.8296	3.8297	3.8298	3.8298	3.8299
52 40	3.8299	3.8300	3.8301	3.8301	3.8302	3.8303	3.8303	3.8304	3.8305	3.8305
52 50	3.8306	3.8307	3.8307	3.8308	3.8308	3.8309	3.8310	3.8310	3.8311	3.8312
1 53 0	3.8312	3.8313	3.8314	3.8314	3.8315	3.8315	3.8316	3.8317	3.8317	3.8318
53 10	3.8319	3.8319	3.8320	3.8321	3.8321	3.8322	3.8323	3.8323	3.8324	3.8324
53 20	3.8325	3.8326	3 8326	3.8327	3.8328	3.8328	3.8329	3.8330	3.8330	3.8331
53 30	3.8331	3.8332	3.8333	3.8333	3.8334	3.8335	3.8335	3.8336	3.8337	3.8337
53 40	3.8338	3.8338	3.8339	3.8340	3.8340	3.8341	3.8342	3.8342	3.8343	3.8344
53 50	3.8344	3.8345	3.8345	3.8346	3.8347	3.8347	3.8348	3.8349	3.8349	3.8350
1 54 0	3.8351	3.8351	3.8352	3.8352	3.8353	3.8354	3.8354	3.8355	3.8356	3.8356
54 10	3.8357	3.8358	3.8358	3.8359	3.8359	3.8360	3.8361	3.8361	3.8362	3.8363
54 20	3.8363	3.8364	3.8365	3.8365	3.8366	3.8366	3.8367	3.8368	3.8368	3.8369
54 30	3.8370	3.8370	3.8371	3.8371	3.8372	3.8373	3.8373	3.8374	3.8375	3.8375
54 40	3.8376	3.8377	3.8377	3.8378	3.8378	3.8379	3.8380	3.8380	3.8381	3.8382
54 50	3.8382	3.8383	3.8383	3.8384	3.8385	3.8385	3.8386	3.8387	3.8387	3.8388
1 55 0	3.8388	3.8389	3.8390	3.8390	3.8391	3.8392	3.8392	3.8393	3.8394	3.8394
55 10	3.8395	3.8395	3.8396	3.8397	3.8397	3.8398	3.8399	3.8399	3.8400	3.8400
55 20	3.8401	3.8402	3.8402	3.8403	3.8404	3.8404	3.8405	3.8405	3.8406	3.8407
55 30	3.8407	3.8408	3.8409	3.8409	3.8410	3.8410	3.8411	3.8412	3.8412	3.8413
55 40	3.8414	3.8414	3.8415	3.8415	3.8416	3.8417	3.8417	3.8418	3 8419	3.8419
55 50	3.8420	3.8420	3.8421	3.8422	3.8422	3.8423	3.8424	3.8424	3.8425	3.8425
1 56 0	3.8426	3.8427	3.8427	3.8428	3.8429	3.8429	3.8430	3.8430	3.8431	3.8432
56 10	3.8432	3.8433	3.8434	3.8434	3.8435	3.8435	3.8436	3.8437	3.8437	3.8438
56 20	3.8439	3.8439	3.8440	3.8440	3.8441	3.8442	3.8442	3.8443	3.8444	3.8444
56 30	3.8445	3.8445	3.8446	3.8447	3.8447	3.8448	3.8448	3.8449	3.8450	3.8450
56 40	3.8451	3.8452	3.8452	3.8453	3.8453	3.8454	3.8455	3.8455	3.8456	3.8457
56 50	3.8457	3.8458	3.8458	3.8459	3.8460	3.8460	3.8461	3.8462	3.8462	3.8463
1 57 0	3.8463	3.8464	3.8465	3.8465	3.8466	3.8466	3.8467	3.8468	3.8468	3.8469
57 10	3.8470	3.8470	3.8471	3.8471	3.8472	3.8473	3.8473	3.8474	3.8474	3.8475
57 20	3.8476	3.8476	3.8477	3.8478	3.8478	3.8479	3.8479	3.8480	3.8481	3.8481
57 30	3.8482	3.8483	3.8483	3.8484	3.8484	3.8485	3.8486	3.8486	3.8487	3.8487
57 40	3.8488	3.8489	3.8489	3.8490	3.8491	3.8491	3.8492	3.8492	3.8493	3.8494
57 50	3.8494	3 8495	3.8495	3.8496	3.8497	3.8497	3.8498	3.8499	3.8499	3.8500
1 58 0	3.8500	3.8501	3.8502	3.8502	3.8503	3.8503	3.8504	3.8505	3.8505	3.8506
58 10	3.8506	3.8507	3.8508	3.8508	3.8509	3.8510	3.8510	3.8511	3.8511	3.8512
58 20	3.8513	3.8513	3.8514	3.8514	3.8515	3.8516	3.8516	3.8517	3.8517	3.8518
58 30	3.8519	3.8519	3.8520	3.8521	3.8521	3.8522	3.8522	3.8523	3.8524	3.8524
58 40	3.8525	3.8525	3.8526	3.8527	3.8527	3.8528	3.8528	3.8529	3.8530	3.8530
58 50	3.8531	3.8532	3.8532	3.8533	3.8533	3.8534	3.8535	3.8535	3.8536	3.8536
1 59 0	3.8537	3.8538	3.8538	3.8539	3.8539	3.8540	3.8541	3.8541	3.8542	3.8542
59 10	3.8543	3.8544	3.8544	3.8545	3.8545	3.8546	3.8547	3.8547	3.8548	3.8549
59 20	3.8549	3.8550	3.8550	3.8551	3.8552	3.8552	3.8553	3.8553	3.8554	3.8555
59 30	3.8555	3.8556	3.8556	3.8557	3.8558	3.8558	3.8559	3.8559	3.8560	3.8561
59 40	3 8561	3.8562	3 8562	3.8563	3.8564	3.8564	3.8565	3.8565	3.8566	3.8567
59 50	3.8567	3.8568	3.8568	3.8569	3.8570	3.8570	3.8571	3.8572	3.8572	3.8573

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
2h.	0m.	0s.	3.8573	3.8574	3.8575	3.8575	3.8576	3.8576	3.8577	3.8578	3.8578	3.8579
	0	10	3.8579	3.8580	3.8581	3.8581	3.8582	3.8582	3.8583	3.8584	3.8584	3.8585
	0	20	3.8585	3.8586	3.8587	3.8587	3.8588	3.8588	3.8589	3.8590	3.8590	3.8591
	0	30	3.8591	3.8592	3.8593	3.8593	3.8594	3 8594	3.8595	3.8596	3.8596	3.8597
	0	40	3.8597	3.8598	3.8599	3.8599	3.8600	3.8600	3.8601	3.8602	3.8602	3.8603
	0	50	3.8603	3.8604	3.8605	3.8605	3.8606	3.8606	3.8607	3.8608	3.8608	3.8609
2	1	0	3.8609	3.8610	3.8611	3.8611	3.8612	3.8612	3.8613	3.8614	3 8614	3.8615
	1	10	3.8615	3.8616	3.8617	3.8617	3.8618	3.8618	3.8619	3.8620	3.8620	3.8621
	1	20	3.8621	3.8622	3.8623	3.8623	3.8624	3.8624	3.8625	3.8625	3.8626	3.8627
	1	30	3.8627	3.8628	3.8628	3.8629	3.8630	3.8630	3.8631	3.8631	3.8632	3.8633
	1	40	3.8633	3.8634	3.8634	3.8635	3.8636	3.8636	3.8637	3.8637	3.8638	3.8639
	1	50	3.8639	3.8640	3.8640	3.8641	3.8642	3.8642	3.8643	3.8643	3.8644	3.8645
2	2	0	3.8645	3.8646	3.8646	3.8647	3.8647	3.8648	3.8649	3.8649	3.8650	3.8650
	2	10	3.8651	3.8652	3.8652	3.8653	3.8653	3.8654	3.8655	3.8655	3.8656	3.8656
	2	20	3.8657	3.8658	3.8658	3.8659	3.8659	3.8660	3.8661	3.8661	3.8662	3.8662
	2	30	3.8663	3.8663	3.8664	3.8665	3.8665	3.8666	3.8666	3.8667	3.8668	3.8668
	2	40	3.8669	3.8669	3.8670	3.8671	3.8671	3.8672	3.8672	3.8673	3.8673	3.8674
	2	50	3.8675	3.8675	3.8676	3.8676	3.8677	3.8678	3.8678	3.8679	3.8679	3.8680
2	3	0	3.8681	3.8681	3.8682	3.8682	3.8683	3.8684	3.8684	3.8685	3.8685	3.8686
	3	10	3.8686	3.8687	3.8688	3.8688	3.8689	3.8689	3.8690	3.8691	3.8691	3.8692
	3	20	3.8692	3.8693	3.8693	3.8694	3.8695	3.8695	3.8696	3.8696	3.8697	3.8698
	3	30	3.8698	3.8699	3.8699	3.8700	3.8701	3.8701	3.8702	3.8702	3.8703	3.8703
	3	40	3.8704	3.8705	3.8705	3.8706	3.8706	3.8707	3.8708	3.8708	3.8709	3.8709
	3	50	3.8710	3.8710	3.8711	3.8712	3.8712	3.8713	3.8713	3.8714	3.8715	3.8715
2	4	0	3.8716	3.8716	3.8717	3.8717	3.8718	3.8719	3.8719	3.8720	3.8720	3.8721
	4	10	3.8722	3.8722	3.8723	3.8723	3.8724	3.8724	3.8725	3.8726	3.8726	3.8727
	4	20	3.8727	3.8728	3.8729	3.8729	3.8730	3.8730	3.8731	3.8731	3.8732	3.8733
	4	30	3.8733	3.8734	3.8734	3.8735	3.8736	3.8736	3.8737	3.8737	3.8738	3.8738
	4	40	3.8739	3.8740	3.8740	3.8741	3.8741	3.8742	3.8742	3.8743	3.8744	3.8744
	4	50	3.8745	3.8745	3.8746	3.8747	3.8747	3.8748	3.8748	3.8749	3.8749	3.8750
2	5	0	3.8751	3.8751	3.8752	3.8752	3.8753	3.8754	3.8754	3.8755	3.8755	3.8756
	5	10	3.8756	3.8757	3.8758	3.8758	3.8759	3.8759	3.8760	3.8760	3.8761	3.8762
	5	20	3.8762	3.8763	3.8763	3.8764	3.8764	3.8765	3.8766	3.8766	3.8767	3.8767
	5	30	3.8768	3.8769	3.8769	3.8770	3.8770	3.8771	3.8771	3.8772	3.8773	3.8773
	5	40	3.8774	3.8774	3.8775	3.8775	3.8776	3.8777	3.8777	3.8778	3 8778	3.8779
	5	50	3.8779	3.8780	3.8781	3.8781	3.8782	3.8782	3.8783	3.8783	3.8784	3.8785
2	6	0	3.8785	3.8786	3.8786	3.8787	3.8788	3.8788	3.8789	3.8789	3.8790	3.8790
	6	10	3.8791	3.8792	3.8792	3.8793	3.8793	3.8794	3.8794	3.8795	3.8796	3.8796
	6	20	3.8797	3.8797	3.8798	3.8798	3.8799	3.8800	3.8800	3.8801	3.8801	3.8802
	6	30	3.8802	3.8803	3.8804	3.8804	3.8805	3.8805	3.8806	3.8806	3.8807	3.8808
	6	40	3.8808	3.8809	3.8809	3.8810	3.8810	3.8811	3.8812	3.8812	3.8813	3.8813
	6	50	3.8814	3.8814	3.8815	3.8816	3.8816	3.8817	3.8817	3.8818	3.8818	3.8819
2	7	0	3.8820	3.8820	3.8821	3.8821	3.8822	3.8822	3.8823	3.8824	3.8824	3.8825
	7	10	3.8825	3.8826	3.8826	3.8827	3.8828	3.8828	3.8829	3.8829	3.8830	3.8830
	7	20	3.8831	3.8832	3.8832	3.8833	3.8833	3.8834	3.8834	3.8835	3.8835	3.8836
	7	30	3.8837	3.8837	3.8838	3.8838	3.8839	3.8839	3.8840	3.8841	3.8841	3.8842
	7	40	3.8842	3.8843	3.8843	3.8844	3.8845	3.8845	3.8846	3.8846	3.8847	3.8847
	7	50	3.8848	3 8849	3.8849	3.8850	3.8850	3.8851	3.8851	3.8852	3.8852	3.8853
2	8	0	3.8854	3.8854	3.8855	3.8855	3.8856	3.8856	3.8857	3.8858	3.8858	3.8859
	8	10	3.8859	3.8860	3.8860	3.8861	3.8862	3.8862	3.8863	3.8863	3.8864	3.8864
	8	20	3.8865	3.8865	3.8866	3.8867	3.8867	3.8868	3.8868	3.8869	3.8869	3.8870
	8	30	3.8871	3.8871	3.8872	3.8872	3.8873	3.8873	3.8874	3.8874	3.8875	3.8876
	8	40	3.8876	3.8877	3.8877	3.8878	3.8878	3.8879	3.8880	3.8880	3.8881	3.8881
	8	50	3.8882	3.8882	3.8883	3.8883	3.8884	3.8885	3.8885	3.8886	3.8886	3.8887
2	9	0	3.8887	3.8888	3.8889	3.8889	3.8890	3.8890	3.8891	3.8891	3.8892	3.8892
	9	10	3.8893	3.8894	3.8894	3.8895	3.8895	3.8896	3.8896	3.8897	3.8897	3.8898
	9	20	3.8899	3.8899	3.8900	3.8900	3.8901	3.8901	3.8902	3.8903	3.8903	3.8904
	9	30	3.8904	3.8905	3.8905	3.8906	3.8906	3.8907	3.8908	3.8908	3.8909	3.8909
	9	40	3.8910	3.8910	3 8911	3.8911	3.8912	3.8912	3.8913	3.8914	3.8914	3.8915
	9	50	3.8915	3.8916	3.8916	3.8917	3.8918	3.8918	3.8919	3.8919	3.8920	3.8920

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° ′ 2^{h} 10^{m} 0^{s}	3.8921	3.8922	3.8922	3.8923	3.8923	3.8924	3.8924	3.8925	3.8925	3.8926
10 10	3.8927	3.8927	3.8928	3.8928	3.8929	3.8929	3.8930	3.8930	3.8931	3.8932
10 20	3.8932	3.8933	3.8933	3.8934	3.8934	3.8935	3.8935	3.8936	3.8937	3.8937
10 30	3.8938	3.8938	3.8939	3.8939	3.8940	3.8940	3.8941	3.8941	3.8942	3.8943
10 40	3.8943	3.8944	3.8944	3.8945	3.8945	3.8946	3.8946	3.8947	3.8948	3.8948
10 50	3.8949	3.8949	3.8950	3.8950	3.8951	3.8951	3.8952	3.8953	3.8953	3.8954
2 11 0	3.8954	3.8955	3.8955	3.8956	3.8956	3.8957	3.8958	3.8958	3.8959	3.8959
11 10	3.8960	3.8960	3.8961	3.8961	3.8962	3.8963	3.8963	3.8964	3.8964	3.8965
11 20	3.8965	3.8966	3.8966	3.8967	3.8967	3.8968	3.8969	3.8969	3.8970	3.8970
11 30	3.8971	3.8971	3.8972	3.8972	3.8973	3.8974	3.8974	3.8975	3.8975	3.8976
11 40	3.8976	3.8977	3.8977	3.8978	3.8978	3.8979	3.8980	3.8980	3.8981	3.8981
11 50	3.8982	3.8982	3.8983	3.8983	3.8984	3.8985	3.8985	3.8986	3.8986	3.8987
2 12 0	3.8987	3.8988	3.8988	3.8989	3.8989	3.8990	3.8991	3.8991	3.8992	3.8992
12 10	3.8993	3.8993	3.8994	3.8994	3.8995	3.8995	3.8996	3.8997	3.8997	3.8998
12 20	3.8998	3.8999	3.8999	3.9000	3.9000	3.9001	3.9001	3.9002	3.9003	3.9003
12 30	3.9004	3.9004	3.9005	3.9005	3.9006	3.9006	3.9007	3.9007	3.9008	3.9009
12 40	3.9009	3.9010	3.9010	3.9011	3.9011	3.9012	3.9012	3.9013	3.9013	3.9014
12 50	3.9015	3.9015	3.9016	3.9016	3.9017	3.9017	3.9018	3.9018	3.9019	3.9019
2 13 0	3.9020	3.9021	3.9021	3.9022	3.9022	3.9023	3.9023	3.9024	3.9024	3.9025
13 10	3.9025	3.9026	3.9027	3.9027	3.9028	3.9028	3.9029	3.9029	3.9030	3.9030
13 20	3.9031	3.9031	3.9032	3.9033	3.9033	3.9034	3.9034	3.9035	3.9035	3.9036
13 30	3.9036	3.9037	3.9037	3.9038	3.9038	3.9039	3.9040	3 9040	3.9041	3.9041
13 40	3.9042	3.9042	3.9043	3.9043	3.9044	3.9044	3.9045	3.9046	3.9046	3.9047
13 50	3.9047	3.9048	3.9048	3.9049	3.9049	3.9050	3.9050	3.9051	3.9051	3.9052
2 14 0	3.9053	3.9053	3.9054	3.9054	3.9055	3.9055	3.9056	3.9056	3.9057	3.9057
14 10	3.9058	3.9058	3.9059	3.9060	3.9060	3.9061	3.9061	3.9062	3.9062	3.9063
14 20	3.9063	3.9064	3.9064	3.9065	3.9066	3.9066	3.9067	3.9067	3.9068	3.9068
14 30	3.9069	3.9069	3.9070	3.9070	3.9071	3.9071	3.9072	3.9073	3.9073	3.9074
14 40	3.9074	3.9075	3.9075	3.9076	3.9076	3.9077	3.9077	3.9078	3.9078	3.9079
14 50	3.9079	3.9080	3.9081	3.9081	3.9082	3.9082	3.9083	3.9083	3.9084	3.9084
2 15 0	3.9085	3.9085	3.9086	3.9086	3.9087	3.9088	3.9088	3.9089	3.9089	3.9090
15 10	3.9090	3.9091	3.9091	3.9092	3.9092	3.9093	3.9093	3.9094	3.9094	3.9095
15 20	3.9096	3.9096	3.9097	3.9097	3.9098	3.9098	3.9099	3.9099	3.9100	3.9100
15 30	3.9101	3.9101	3.9102	3.9103	3.9103	3.9104	3.9104	3.9105	3.9105	3.9106
15 40	3.9106	3.9107	3.9107	3.9108	3.9108	3.9109	3.9109	3.9110	3.9111	3.9111
15 50	3.9112	3.9112	3.9113	3.9113	3.9114	3.9114	3.9115	3.9115	3.9116	3.9116
2 16 0	3.9117	3.9117	3.9118	3.9118	3.9119	3.9120	3.9120	3.9121	3.9121	3.9122
16 10	3.9122	3.9123	3.9123	3.9124	3.9124	3.9125	3.9125	3.9126	3.9126	3.9127
16 20	3.9128	3.9128	3.9129	3.9129	3.9130	3.9130	3.9131	3.9131	3.9132	3.9132
16 30	3.9133	3.9133	3.9134	3.9134	3.9135	3.9135	3.9136	3.9137	3.9137	3.9138
16 40	3.9138	3.9139	3.9139	3.9140	3.9140	3.9141	3.9141	3.9142	3.9142	3.9143
16 50	3.9143	3.9144	3.9144	3.9145	3.9146	3.9146	3.9147	3.9147	3.9148	3.9148
2 17 0	3.9149	3.9149	3.9150	3.9150	3.9151	3.9151	3.9152	3.9152	3.9153	3.9153
17 10	3.9154	3.9155	3.9155	3.9156	3.9156	3.9157	3.9157	3.9158	3.9158	3.9159
17 20	3.9159	3.9160	3.9160	3.9161	3.9161	3.9162	3.9162	3.9163	3.9163	3.9164
17 30	3.9165	3.9165	3.9166	3.9166	3.9167	3.9167	3.9168	3.9168	3.9169	3.9169
17 40	3.9170	3.9170	3.9171	3.9171	3.9172	3.9172	3.9173	3.9173	3.9174	3.9175
17 50	3.9175	3.9176	3.9176	3.9177	3.9177	3.9178	3.9178	3.9179	3.9179	3.9180
2 18 0	3.9180	3.9181	3.9181	3.9182	3.9182	3.9183	3.9183	3.9184	3.9184	3.9185
18 10	3.9186	3.9186	3.9187	3.9187	3.9188	3.9188	3.9189	3.9189	3.9190	3.9190
18 20	3.9191	3.9191	3.9192	3.9192	3.9193	3.9193	3.9194	3.9194	3.9195	3.9195
18 30	3.9196	3.9197	3.9197	3.9198	3.9198	3.9199	3.9199	3.9200	3.9200	3.9201
18 40	3.9201	3.9202	3.9202	3.9203	3.9203	3.9204	3.9204	3.9205	3.9205	3.9206
18 50	3.9206	3.9207	3.9207	3.9208	3.9209	3.9209	3.9210	3.9210	3.9211	3.9211
2 19 0	3.9212	3.9212	3.9213	3.9213	3.9214	3.9214	3.9215	3.9215	3.9216	3.9216
19 10	3.9217	3.9217	3.9218	3.9218	3.9219	3.9219	3.9220	3.9221	3.9221	3.9222
19 20	3.9222	3.9223	3.9223	3.9224	3.9224	3.9225	3.9225	3.9226	3.9226	3.9227
19 30	3.9227	3.9228	3.9228	3.9229	3.9229	3.9230	3.9230	3.9231	3.9231	3.9232
19 40	3.9232	3.9233	3.9233	3.9234	3.9235	3.9235	3.9236	3.9236	3.9237	3.9237
19 50	3.9238	3.9238	3.9239	3.9239	3.9240	3.9240	3.9241	3.9241	3.9242	3.9242

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
2h. 20m. 0s.	3.9243	3.9243	3.9244	3.9244	3.9245	3.9245	3.9246	3.9246	3.9247	3.9247
20 10	3.9248	3.9248	3.9249	3.9250	3.9250	3.9251	3.9251	3.9252	3.9252	3.9253
20 20	3.9253	3.9254	3.9254	3.9255	3.9255	3.9256	3.9256	3.9257	3.9257	3.9258
20 30	3.9258	3.9259	3.9259	3.9260	3.9260	3.9261	3.9261	3.9262	3.9262	3.9263
20 40	3.9263	3.9264	3.9264	3.9265	3.9265	3.9266	3.9267	3.9267	3.9268	3.9268
20 50	3.9269	3.9269	3.9270	3.9270	3.9271	3.9271	3.9272	3.9272	3.9273	3.9273
2 21 0	3.9274	3.9274	3.9275	3.9275	3.9276	3.9276	3.9277	3.9277	3.9278	3.9278
21 10	3.9279	3.9279	3.9280	3.9280	3.9281	3.9281	3.9282	3.9282	3.9283	3.9283
21 20	3.9284	3.9284	3.9285	3.9285	3.9286	3.9287	3.9287	3.9288	3.9288	3.9289
21 30	3.9289	3.9290	3.9290	3.9291	3.9291	3.9292	3.9292	3.9293	3.9293	3.9294
21 40	3.9294	3.9295	3.9295	3.9296	3.9296	3.9297	3.9297	3.9298	3.9298	3.9299
21 50	3.9299	3.9300	3.9300	3.9301	3.9301	3.9302	3.9302	3.9303	3.9303	3.9304
2 22 0	3.9304	3.9305	3.9305	3.9306	3.9306	3.9307	3.9307	3.9308	3.9308	3.9309
22 10	3.9309	3.9310	3.9311	3.9311	3.9312	3.9312	3.9313	3.9313	3.9314	3.9314
22 20	3.9315	3.9315	3.9316	3.9316	3.9317	3.9317	3.9318	3.9318	3.9319	3.9319
22 30	3.9320	3.9320	3.9321	3.9321	3.9322	3.9322	3.9323	3.9323	3.9324	3.9324
22 40	3.9325	3.9325	3.9326	3.9326	3.9327	3.9327	3.9328	3.9328	3.9329	3.9329
22 50	3.9330	3.9330	3.9331	3.9331	3.9332	3.9332	3.9333	3.9333	3.9334	3.9334
2 23 0	3.9335	3.9335	3.9336	3.9336	3.9337	3.9337	3.9338	3.9338	3.9339	3.9339
23 10	3.9340	3.9340	3.9341	3.9341	3.9342	3.9342	3.9343	3.9343	3.9344	3.9344
23 20	3.9345	3.9345	3.9346	3.9346	3.9347	3.9348	3.9348	3.9349	3.9349	3.9350
23 30	3.9350	3.9351	3.9351	3.9352	3.9352	3.9353	3.9353	3 9354	3.9354	3.9355
23 40	3.9355	3.9356	3.9356	3.9357	3.9357	3.9358	3.9358	3.9359	3.9359	3.9360
23 50	3.9360	3.9361	3.9361	3.9362	3.9362	3.9363	3.9363	3.9364	3.9364	3.9365
2 24 0	3.9365	3.9366	3.9366	3.9367	3.9367	3.9368	3.9368	3.9369	3.9369	3.9370
24 10	3.9370	3.9371	3.9371	3.9372	3.9372	3.9373	3.9373	3.9374	3.9374	3.9375
24 20	3.9375	3.9376	3.9376	3.9377	3.9377	3.9378	3.9378	3.9379	3.9379	3.9380
24 30	3.9380	3.9381	3.9381	3.9382	3.9382	3.9383	3.9383	3.9384	3.9384	3.9385
24 40	3.9385	3.9386	3.9386	3.9387	3.9387	3.9388	3.9388	3.9389	3.9389	3.9390
24 50	3.9390	3.9391	3.9391	3.9392	3.9392	3 9393	3.9393	3.9394	3.9394	3.9395
2 25 0	3.9395	3.9396	3.9396	3.9397	3.9397	3.9398	3.9398	3.9399	3.9399	3.9400
25 10	3.9400	3.9401	3.9401	3.9402	3.9402	3.9403	3.9403	3.9404	3.9404	3.9405
25 20	3.9405	3.9406	3.9406	3.9407	3.9407	3.9408	3.9408	3.9409	3.9409	3.9410
25 30	3.9410	3.9411	3.9411	3.9412	3.9412	3.9413	3.9413	3.9414	3.9414	3.9415
25 40	3.9415	3.9416	3.9416	3.9417	3.9417	3.9418	3.9418	3.9419	3.9419	3.9420
25 50	3.9420	3.9421	3.9421	3.9422	3.9422	3.9423	3.9423	3.9424	3.9424	3.9425
2 26 0	3.9425	3.9426	3.9426	3.9427	3.9427	3.9428	3.9428	3.9429	3.9429	3.9430
26 10	3.9430	3.9430	3.9431	3.9431	3.9432	3.9432	3.9433	3.9433	3.9434	3.9434
26 20	3.9435	3.9435	3.9436	3.9436	3.9437	3.9437	3.9438	3.9438	3.9439	3.9439
26 30	3.9440	3.9440	3.9441	3.9441	3.9442	3.9442	3.9443	3.9443	3.9444	3.9444
26 40	3.9445	3.9445	3.9446	3.9446	3.9447	3.9447	3.9448	3.9448	3.9449	3.9449
26 50	3.9450	3.9450	3.9451	3.9451	3.9452	3.9452	3.9453	3.9453	3.9454	3.9454
2 27 0	3.9455	3.9455	3.9456	3.9456	3.9457	3.9457	3.9458	3.9458	3.9459	3.9459
27 10	3.9460	3.9460	3.9461	3.9461	3.9462	3.9462	3.9463	3.9463	3.9464	3.9464
27 20	3.9465	3.9465	3.9466	3.9466	3.9466	3.9467	3.9467	3.9468	3.9468	3.9469
27 30	3.9469	3.9470	3.9470	3.9471	3.9471	3.9472	3.9472	3.9473	3.9473	3.9474
27 40	3.9474	3.9475	3.9475	3.9476	3.9476	3.9477	3.9477	3.9478	3.9478	3.9479
27 50	3.9479	3.9480	3.9480	3.9481	3.9481	3.9482	3.9482	3.9483	3.9483	3.9484
2 28 0	3.9484	3.9485	3.9485	3.9486	3.9486	3.9487	3.9487	3.9488	3.9488	3.9489
28 10	3.9489	3.9490	3.9490	3.9490	3.9491	3.9491	3.9492	3.9492	3.9493	3.9493
28 20	3.9494	3.9494	3.9495	3.9495	3.9496	3.9496	3.9497	3.9497	3.9498	3.9498
28 30	3.9499	3.9499	3.9500	3.9500	3.9501	3.9501	3.9502	3.9502	3.9503	3.9503
28 40	3.9504	3.9504	3.9505	3.9505	3.9506	3.9506	3.9507	3.9507	3.9508	3.9508
28 50	3.9509	3.9509	3.9509	3.9510	3.9510	3.9511	3.9511	3.9512	3.9512	3.9513
2 29 0	3.9513	3.9514	3.9514	3.9515	3.9515	3.9516	3.9516	3.9517	3.9517	3.9518
29 10	3.9518	3.9519	3.9519	3.9520	3.9520	3.9521	3.9521	3.9522	3.9522	3.9523
29 20	3.9523	3.9524	3.9524	3.9525	3.9525	3.9526	3.9526	3.9526	3.9527	3.9527
29 30	3.9528	3.9528	3.9529	3.9529	3.9530	3.9530	3.9531	3.9531	3.9532	3.9532
29 40	3.9533	3.9533	3.9534	3.9534	3.9535	3.9535	3.9536	3.9536	3.9537	3.9537
29 50	3.9538	3.9538	3.9539	3.9539	3.9540	3.9540	3.9540	3.9541	3.9541	3.9542

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
2h 30m 0s	3.9542	3.9543	3.9543	3.9544	3.9544	3.9545	3.9545	3.9546	3.9546	3.9547
30 10	3.9547	3.9548	3.9548	3.9549	3.9549	3.9550	3.9550	3.9551	3.9551	3.9552
30 20	3.9552	3.9553	3.9553	3.9554	3.9554	3.9554	3.9555	3.9555	3.9556	3.9556
30 30	3.9557	3.9557	3.9558	3.9558	3.9559	3.9559	3.9560	3.9560	3.9561	3.9561
30 40	3.9562	3.9562	3.9563	3.9563	3.9564	3.9564	3.9565	3.9565	3.9566	3.9566
30 50	3.9566	3.9567	3.9567	3.9568	3.9568	3.9569	3.9569	3.9570	3.9570	3.9571
2 31 0	3.9571	3.9572	3.9572	3.9573	3.9573	3.9574	3.9574	3.9575	3.9575	3.9576
31 10	3.9576	3.9577	3.9577	3.9578	3.9578	3.9578	3.9579	3.9579	3.9580	3.9580
31 20	3.9581	3.9581	3.9582	3.9582	3.9583	3.9583	3.9584	3.9584	3.9585	3.9585
31 30	3.9586	3.9586	3.9587	3.9587	3.9588	3.9588	3.9589	3.9589	3.9589	3.9590
31 40	3.9590	3.9591	3.9591	3.9592	3.9592	3.9593	3.9593	3.9594	3.9594	3.9595
31 50	3.9595	3.9596	3.9596	3.9697	3.9597	3.9598	3.9598	3.9599	3.9599	3.9599
2 32 0	3.9600	3.9600	3.9601	3.9601	3.9602	3.9602	3.9603	3.9603	3.9604	3.9604
32 10	3.9605	3.9605	3.9606	3.9606	3.9607	3.9607	3.9608	3.9608	3.9609	3.9609
32 20	3.9609	3.9610	3.9610	3.9611	3.9611	3.9612	3.9612	3.9613	3.9613	3.9614
32 30	3.9614	3.9615	3.9615	3.9616	3.9616	3.9617	3.9617	3.9618	3.9618	3.9618
32 40	3.9619	3.9619	3.9620	3.9620	3.9621	3.9621	3.9622	3.9622	3.9623	3.9623
32 50	3.9624	3.9624	3.9625	3.9625	3.9626	3.9626	3.9627	3.9627	3.9627	3.9628
2 33 0	3.9628	3.9629	3.9629	3.9630	3.9630	3.9631	3.9631	3.9632	3.9632	3.9633
33 10	3.9633	3.9634	3.9634	3.9634	3.9635	3.9635	3.9636	3.9636	3.9637	3.9637
33 20	3.9638	3.9638	3.9639	3.9639	3.9640	3.9640	3.9641	3.9641	3.9642	3.9642
33 30	3.9642	3.9643	3.9643	3.9644	3.9644	3.9645	3.9645	3.9646	3.9646	3.9647
33 40	3.9647	3.9648	3.9648	3.9649	3.9649	3.9650	3.9650	3.9651	3.9651	3.9652
33 50	3.9652	3.9653	3.9653	3.9653	3.9654	3.9654	3.9655	3.9655	3.9656	3.9656
2 34 0	3.9657	3.9657	3.9658	3.9658	3.9658	3.9659	3.9659	3.9660	3.9660	3.9661
34 10	3.9661	3.9662	3.9662	3.9663	3.9663	3.9664	3.9664	3.9665	3.9665	3.9665
34 20	3.9666	3.9666	3.9667	3.9667	3.9668	3.9668	3.9669	3.9669	3.9670	3.9670
34 30	3.9671	3.9671	3.9672	3.9672	3.9672	3.9673	3.9673	3.9674	3.9674	3.9675
34 40	3.9675	3.9676	3.9676	3.9677	3.9677	3.9678	3.9678	3.9679	3.9679	3.9680
34 50	3.9680	3.9681	3.9681	3.9682	3.9682	3.9682	3.9683	3.9683	3.9684	3.9684
2 35 0	3.9685	3.9685	3.9686	3.9686	3.9687	3.9687	3.9688	3.9688	3.9689	3.9689
35 10	3.9689	3.9690	3.9690	3.9691	3.9691	3.9692	3.9692	3.9693	3.9693	3.9694
35 20	3.9694	3.9695	3.9695	3.9696	3.9696	3.9696	3.9697	3.9697	3.9698	3.9698
35 30	3.9699	3.9699	3.9700	3.9700	3.9701	3.9701	3.9702	3.9702	3.9703	3.9703
35 40	3.9703	3.9704	3.9704	3.9705	3.9705	3.9706	3.9706	3.9707	3.9707	3.9708
35 50	3.9708	3.9709	3.9709	3.9710	3.9710	3.9710	3.9711	3.9711	3.9712	3.9712
2 36 0	3.9713	3.9713	3.9714	3.9714	3.9715	3.9715	3.9716	3.9716	3.9716	3.9717
36 10	3.9717	3.9718	3.9718	3.9719	3.9719	3.9720	3.9720	3.9721	3.9721	3.9722
36 20	3.9722	3.9722	3.9723	3.9723	3.9724	3.9724	3.9725	3.9725	3.9726	3.9726
36 30	3.9727	3.9727	3.9728	3.9728	3.9729	3.9729	3.9729	3.9730	3.9730	3.9731
36 40	3.9731	3.9732	3.9732	3.9733	3.9733	3.9734	3.9734	3.9735	3.9735	3.9735
36 50	3.9736	3.9736	3.9737	3.9737	3.9738	3.9738	3.9739	3.9739	3.9740	3.9740
2 37 0	3.9741	3.9741	3.9741	3.9742	3.9742	3.9743	3.9743	3.9744	3.9744	3.9745
37 10	3.9745	3.9746	3.9746	3.9746	3.9747	3.9747	3.9748	3.9748	3.9749	3.9749
37 20	3.9750	3.9750	3.9751	3.9751	3.9752	3.9752	3.9752	3.9753	3.9753	3.9754
37 30	3.9754	3.9755	3.9755	3.9756	3.9756	3.9757	3.9757	3.9758	3.9758	3.9758
37 40	3.9759	3.9759	3.9760	3.9760	3.9761	3.9761	3.9762	3.9762	3.9763	3.9763
37 50	3.9763	3.9764	3.9764	3.9765	3.9765	3.9766	3.9766	3.9767	3.9767	3.9768
2 38 0	3.9768	3.9769	3.9769	3.9769	3.9770	3.9770	3.9771	3.9771	3.9772	3.9772
38 10	3.9773	3.9773	3.9774	3.9774	3.9774	3.9775	3.9775	3.9776	3.9776	3.9777
38 20	3.9777	3.9778	3.9778	3.9779	3.9779	3.9779	3.9780	3.9780	3.9781	3.9781
38 30	3.9782	3.9782	3.9783	3.9783	3.9784	3.9784	3.9785	3.9785	3.9785	3.9786
38 40	3.9786	3.9787	3.9787	3.9788	3.9788	3.9789	3.9889	3.9790	3.9790	3.9790
38 50	3.9791	3.9791	3.9792	3.9792	3.9793	3.9793	3.9794	3.9794	3.9795	3.9795
2 39 0	3.9795	3.9796	3.9796	3.9797	3.9797	3.9798	3.9798	3.9799	3.9799	3.9800
39 10	3.9800	3.9800	3.9801	3.9801	3.9802	3.9802	3.9803	3.9803	3.9804	3.9804
39 20	3.9805	3.9805	3.9805	3.9806	3.9806	3.9807	3.9807	3.9808	3.9808	3.9809
39 30	3.9809	3.9810	3.9810	3.9810	3.9811	3.9811	3.9812	3.9812	3.9813	3.9813
39 40	3.9814	3.9814	3.9815	3.9815	3.9815	3.9816	3.9816	3.9817	3.9817	3.9818
39 50	3.9818	3.9819	3.9819	3.9819	3.9820	3.9820	3.9821	3.9821	3.9822	3.9822

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° 2h	′ 40m	″ 0s	3.9823	3.9823	3.9824	3.9824	3.9825	3.9825	3.9825	3.9826	3.9826	3.9827
	40	10	3.9827	3.9828	3.9828	3.9829	3.9829	3.9829	3.9830	3.9830	3.9831	3.9831
	40	20	3.9832	3.9832	3.9833	3.9833	3.9834	3.9834	3.9834	3.9835	3.9835	3.9836
	40	30	3.9836	3.9837	3.9837	3.9838	3.9838	3.9839	3.9839	3.9839	3.9840	3.9840
	40	40	3.9841	3.9841	3.9842	3.9842	3.9843	3.9843	3.9843	3.9844	3.9844	3.9845
	40	50	3.9845	3.9846	3.9846	3.9847	3.9847	3.9848	3.9848	3.9848	3.9849	3.9849
2	41	0	3.9850	3.9850	3.9851	3.9851	3.9852	3.9852	3.9852	3.9853	3.9853	3.9854
	41	10	3.9854	3.9855	3.9855	3.9856	3.9856	3.9857	3.9857	3.9857	3.9858	3.9858
	41	20	3.9859	3.9859	3.9860	3.9860	3.9861	3.9861	3.9861	3.9862	3.9862	3.9863
	41	30	3.9863	3.9864	3.9864	3.9865	3.9865	3.9865	3.9866	3.9866	3.9867	3.9867
	41	40	3.9868	3.9868	3.9869	3.9869	3.9870	3.9870	3.9870	3.9871	3.9871	3.9872
	41	50	3.9872	3.9873	3.9873	3.9874	3.9874	3.9874	3.9875	3.9875	3.9876	3.9876
2	42	0	3.9877	3.9877	3.9878	3.9878	3.9878	3.9879	3.9879	3.9880	3.9880	3 9881
	42	10	3.9881	3.9882	3.9882	3.9882	3.9883	3.9883	3.9884	3.9884	3.9885	3.9885
	42	20	3.9886	3.9886	3.9886	3.9887	3.9887	3.9888	3.9888	3.9889	3.9889	3.9890
	42	30	3.9890	3.9890	3.9891	3.9891	3.9892	3.9892	3.9893	3.9893	3.9894	3.9894
	42	40	3.9894	3.9895	3.9895	3.9896	3.9896	3.9897	3.9897	3.9898	3.9898	3.9898
	42	50	3.9899	3.9899	3.9900	3.9900	3.9901	3.9901	3.9902	3.9902	3.9903	3.9903
2	43	0	3.9903	3.9904	3.9904	3.9905	3.9905	3.9906	3.9906	3.9906	3.9907	3.9907
	43	10	3.9908	3.9908	3.9909	3.9909	3.9910	3.9910	3.9910	3.9911	3.9911	3.9912
	43	20	3.9912	3.9913	3.9913	3.9914	3.9914	3.9914	3.9915	3.9915	3.9916	3.9916
	43	30	3.9917	3.9917	3.9918	3.9918	3.9918	3.9919	3.9919	3 9920	3.9920	3.9921
	43	40	3.9921	3.9922	3.9922	3.9922	3.9923	3.9923	3.9924	3.9924	3.9925	3.9925
	43	50	3.9926	3.9926	3.9926	3.9927	3.9927	3.9928	3.9928	3.9929	3.9929	3.9930
2	44	0	3.9930	3.9930	3.9931	3.9931	3.9932	3.9932	3.9933	3.9933	3.9933	3.9934
	44	10	3.9934	3.9935	3.9935	3.9936	3.9936	3.9937	3.9937	3.9937	3.9938	3.9938
	44	20	3.9939	3.9939	3.9940	3.9940	3.9941	3.9941	3.9941	3.9942	3.9942	3.9943
	44	30	3.9943	3.9944	3.9944	3.9944	3.9945	3.9945	3.9946	3.9946	3.9947	3.9947
	44	40	3.9948	3.9948	3.9948	3.9949	3.9949	3.9950	3.9950	3.9951	3.9951	3.9952
	44	50	3.9952	3.9952	3.9953	3.9953	3.9954	3 9954	3.9955	3.9955	3.9955	3.9956
2	45	0	3.9956	3.9957	3.9957	3.9958	3.9958	3.9959	3.9959	3.9959	3.9960	3.9960
	45	10	3.9961	3.9961	3.9962	3.9962	3.9962	3.9963	3.9963	3.9964	3.9964	3.9965
	45	20	3.9965	3.9966	3.9966	3.9966	3.9967	3.9967	3.9968	3.9968	3.9969	3.9969
	45	30	3.9969	3.9970	3.9970	3.9971	3.9971	3.9972	3.9972	3.9973	3.9973	3.9973
	45	40	3.9974	3.9974	3.9975	3.9975	3.9976	3.9976	3.9976	3.9977	3.9977	3.9978
	45	50	3.9978	3.9979	3.9979	3.9980	3.9980	3.9980	3.9981	3.9981	3.9982	3.9982
2	46	0	3.9983	3.9983	3.9983	3.9984	3.9984	3.9985	3.9985	3.9986	3.9986	3.9987
	46	10	3.9987	3.9987	3.9988	3.9988	3.9989	3.9989	3.9990	3.9990	3.9990	3.9991
	46	20	3.9991	3.9992	3.9992	3.9993	3.9993	3.9993	3.9994	3.9994	3.9995	3.9995
	46	30	3.9996	3.9996	3.9997	3.9997	3.9997	3.9998	3.9998	3.9999	3.9999	4.0000
	46	40	4.0000	4.0000	4.0001	4.0001	4.0002	4.0002	4.0003	4.0003	4 0003	4.0004
	46	50	4.0004	4.0005	4.0005	4.0006	4.0006	4.0007	4.0007	4.0007	4.0008	4.0008
2	47	0	4.0009	4.0009	4.0010	4.0010	4.0010	4.0011	4.0011	4.0012	4.0012	4.0013
	47	10	4.0013	4.0013	4.0014	4.0014	4.0015	4.0015	4.0016	4.0016	4.0016	4.0017
	47	20	4.0017	4.0018	4.0018	4.0019	4.0019	4.0019	4.0020	4.0020	4.0021	4.0021
	47	30	4.0022	4.0022	4.0023	4.0023	4.0023	4.0024	4.0024	4.0025	4.0025	4.0026
	47	40	4.0026	4.0026	4.0027	4.0027	4.0028	4.0028	4.0029	4.0029	4.0029	4.0030
	47	50	4.0030	4.0031	4.0031	4.0032	4.0032	4.0032	4.0033	4.0033	4.0034	4.0034
2	48	0	4.0035	4.0035	4.0035	4.0036	4.0036	4.0037	4.0037	4.0038	4.0038	4.0038
	48	10	4.0039	4.0039	4.0040	4.0040	4.0041	4.0041	4.0041	4.0042	4.0042	4.0043
	48	20	4.0043	4.0044	4.0044	4.0045	4.0045	4.0045	4.0046	4.0046	4.0047	4.0047
	48	30	4.0048	4.0048	4.0048	4.0049	4.0049	4.0050	4.0050	4.0051	4.0051	4.0051
	48	40	4.0052	4.0052	4.0053	4.0053	4.0054	4.0054	4.0054	4.0055	4.0055	4.0056
	48	50	4.0056	4.0057	4.0057	4.0057	4.0058	4.0058	4.0059	4.0059	4.0060	4.0060
2	49	0	4.0060	4.0061	4.0061	4.0062	4.0062	4.0063	4.0063	4.0063	4.0064	4.0064
	49	10	4.0065	4.0065	4.0066	4.0066	4.0066	4.0067	4.0067	4.0068	4.0068	4.0069
	49	20	4.0069	4.0069	4.0070	4.0070	4.0071	4.0071	4.0072	4.0072	4.0072	4.0073
	49	30	4.0073	4.0074	4.0074	4.0074	4.0075	4.0075	4.0076	4.0076	4.0077	4.0077
	49	40	4.0077	4.0078	4.0078	4.0079	4.0079	4.0080	4.0080	4.0080	4.0081	4.0081
	49	50	4.0082	4.0082	4.0083	4.0083	4.0083	4.0084	4.0084	4.0085	4.0085	4.0086

TABLE I.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{2}^{h}\cdot\overset{\prime}{50}^{m}\cdot\overset{\prime\prime}{0}^{s}$	4.0086	4.0086	4.0087	4.0087	4.0088	4.0088	4.0089	4.0089	4.0089	4.0090
50 10	4.0090	4.0091	4.0091	4.0092	4.0092	4.0092	4.0093	4.0093	4.0094	4.0094
50 20	4.0095	4.0095	4.0095	4.0096	4.0096	4.0097	4.0097	4 0097	4.0098	4.0098
50 30	4.0099	4.0099	4.0100	4.0100	4.0100	4.0101	4.0101	4.0102	4.0102	4.0103
50 40	4.0103	4.0103	4.0104	4.0104	4.0105	4.0105	4.0106	4.0106	4.0106	4.0107
50 50	4.0107	4.0108	4.0108	4.0109	4.0109	4.0109	4.0110	4.0110	4.0111	4.0111
2 51 0	4.0111	4.0112	4.0112	4.0113	4.0113	4.0114	4.0114	4.0114	4.0115	4.0115
51 10	4.0116	4.0116	4.0117	4.0117	4.0117	4.0118	4.0118	4.0119	4 0119	4.0120
51 20	4.0120	4.0120	4.0121	4.0121	4.0122	4.0122	4.0122	4.0123	4.0123	4.0124
51 30	4.0124	4.0125	4.0125	4.0125	4.0126	4.0126	4.0127	4.0127	4.0128	4.0128
51 40	4.0128	4.0129	4.0129	4.0130	4.0130	4.0130	4.0131	4.0131	4.0132	4.0132
51 50	4.0133	4.0133	4.0133	4.0134	4.0134	4.0135	4.0135	4.0136	4.0136	4.0136
2 52 0	4.0137	4.0137	4.0138	4.0138	4.0138	4.0139	4.0139	4.0140	4.0140	4.0141
52 10	4.0141	4.0141	4.0142	4.0142	4.0143	4.0143	4.0144	4.0144	4.0144	4.0145
52 20	4.0145	4.0146	4.0146	4.0146	4.0147	4.0147	4.0148	4.0148	4.0149	4.0149
52 30	4.0149	4.0150	4.0150	4.0151	4.0151	4.0152	4.0152	4.0153	4.0153	4.0153
52 40	4.0154	4.0154	4.0154	4.0155	4.0155	4.0156	4.0156	4.0157	4.0157	4.0157
52 50	4.0158	4.0158	4.0159	4.0159	4.0159	4.0160	4.0160	4.0161	4.0161	4.0162
2 53 0	4.0162	4.0162	4.0163	4.0163	4.0164	4.0164	4.0164	4.0165	4.0165	4.0166
53 10	4.0166	4.0167	4.0167	4.0167	4.0168	4.0168	4.0169	4.0169	4.0169	4.0170
53 20	4.0170	4.0171	4.0171	4.0172	4.0172	4.0172	4.0173	4.0173	4.0174	4.0174
53 30	4.0175	4.0175	4.0175	4.0176	4.0176	4.0177	4.0177	4.0177	4.0178	4.0178
53 40	4.0179	4.0179	4.0180	4.0180	4.0180	4.0181	4.0181	4.0182	4.0182	4.0182
53 50	4.0183	4 0183	4.0184	4.0184	4.0185	4.0185	4.0185	4.0186	4.0186	4.0187
2 54 0	4.0187	4.0187	4.0188	4.0188	4.0189	4.0189	4.0190	4.0190	4.0190	4.0191
54 10	4.0191	4.0192	4.0192	4.0192	4.0193	4.0193	4.0194	4.0194	4.0194	4.0195
54 20	4.0195	4.0196	4.0196	4.0197	4.0197	4.0197	4.0198	4.0198	4.0199	4.0199
54 30	4.0199	4.0200	4.0200	4.0201	4.0201	4.0202	4.0202	4.0202	4.0203	4.0203
54 40	4.0204	4.0204	4.0204	4.0205	4.0205	4.0206	4.0206	4.0207	4.0207	4.0207
54 50	4.0208	4.0208	4.0209	4.0209	4.0209	4.0210	4.0210	4.0211	4.0211	4.0211
2 55 0	4.0212	4.0212	4.0213	4.0213	4.0214	4.0214	4.0214	4.0215	4.0215	4.0216
55 10	4.0216	4.0216	4.0217	4.0217	4.0218	4.0218	4.0219	4.0219	4.0219	4.0220
55 20	4.0220	4.0221	4.0221	4.0221	4.0222	4.0222	4.0223	4.0223	4.0223	4.0224
55 30	4.0224	4 0225	4.0225	4.0225	4.0226	4.0226	4.0227	4.0227	4.0228	4.0228
55 40	4.0228	4.0229	4.0229	4.0230	4.0230	4.0230	4.0231	4.0231	4.0232	4.0232
55 50	4.0233	4.0233	4.0233	4.0234	4.0234	4.0235	4.0235	4.0235	4.0236	4.0236
2 56 0	4.0237	4.0237	4.0237	4.0238	4.0238	4.0239	4.0239	4.0240	4 0240	4.0240
56 10	4.0241	4.0241	4.0242	4.0242	4.0242	4.0243	4.0243	4.0244	4.0244	4.0244
56 20	4.0245	4.0245	4.0246	4.0246	4.0246	4.0247	4.0247	4.0248	4.0248	4.0249
56 30	4.0249	4.0249	4.0250	4.0250	4.0251	4.0251	4.0251	4.0252	4.0252	4.0253
56 40	4.0253	4.0253	4.0254	4.0254	4.0255	4.0255	4.0256	4.0256	4.0256	4.0257
56 50	4.0257	4.0258	4 0258	4.0258	4.0259	4.0259	4.0260	4.0260	4.0260	4.0261
2 57 0	4.0261	4.0262	4.0262	4.0262	4.0263	4.0263	4.0264	4.0264	4.0265	4.0265
57 10	4.0265	4.0266	4.0266	4.0267	4.0267	4.0267	4.0268	4.0268	4.0269	4.0269
57 20	4.0269	4.0270	4.0270	4.0271	4.0271	4.0271	4.0272	4.0272	4.0273	4.0273
57 30	4.0273	4.0274	4.0274	4.0275	4.0275	4.0276	4.0276	4.0276	4.0277	4.0277
57 40	4.0278	4.0278	4.0278	4.0279	4.0279	4.0280	4.0280	4.0280	4.0281	4.0281
57 50	4.0282	4.0282	4.0282	4.0283	4.0283	4.0284	4.0284	4.0284	4.0285	4.0285
2 58 0	4.0286	4.0286	4 0287	4.0287	4.0287	4.0288	4.0288	4.0289	4.0289	4.0289
58 10	4.0290	4.0290	4.0291	4.0291	4.0291	4.0292	4.0292	4.0293	4.0293	4.0293
58 20	4.0294	4.0294	4.0295	4.0295	4.0295	4.0296	4.0296	4.0297	4.0297	4.0297
58 30	4.0298	4.0298	4.0299	4.0299	4.0300	4.0300	4.0300	4.0301	4.0301	4.0302
58 40	4.0302	4.0302	4.0303	4.0303	4.0304	4.0304	4.0304	4.0305	4.0305	4.0306
58 50	4.0306	4.0306	4.0307	4.0307	4.0308	4.0308	4.0308	4.0309	4.0309	4.0310
2 59 0	4.0310	4.0310	4.0311	4.0311	4.0312	4.0312	4.0312	4.0313	4.0313	4.0314
59 10	4.0314	4.0314	4.0315	4.0315	4.0316	4.0316	4.0317	4.0317	4.0317	4.0318
59 20	4.0318	4.0319	4.0319	4.0319	4.0320	4.0320	4.0321	4.0321	4.0321	4.0322
59 30	4.0322	4.0323	4.0323	4.0323	4.0324	4.0324	4.0325	4.0325	4.0325	4.0326
59 40	4.0326	4.0327	4.0327	4.0327	4.0328	4.0328	4.0329	4.0329	4.0329	4.0330
59 50	4.0330	4.0331	4.0331	4.0331	4.0332	4.0332	4.0333	4.0333	4.0333	4.0334

TABLE II.

TABLE SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Difference of the Proportional Logarithms in the Ephemeris.

Approximate Interval		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

Difference of the Proportional Logarithms in the Ephemeris.

		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	13
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	18
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25	26
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	32

Difference of the Proportional Logarithms in the Ephemeris.

		104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The Correction is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

TABLE III. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	0 00.000	0 09.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 08.807		
1	0 00.164	0 09.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 08.971	1	0.003
2	0 00.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 09.135	2	.005
3	0 00.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 09.298	3	.008
4	0 00.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 09.462	4	.011
5	0 00.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 09.626	5	.014
6	0 00.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 09.790	6	.016
7	0 01.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 00.124	1 09.954	7	.019
8	0 01.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 00.288	1 10.118	8	.022
9	0 01.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 00.452	1 10.281	9	.025
10	0 01.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 00.616	1 10.445	10	.027
11	0 01.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 00.779	1 10.609	11	.030
12	0 01.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 00.943	1 10.773	12	.033
13	0 02.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 01.107	1 10.937	13	.035
14	0 02.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 01.271	1 11.100	14	.038
15	0 02.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 01.435	1 11.264	15	.041
16	0 02.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 01.599	1 11.428	16	.044
17	0 02.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 01.762	1 11.592	17	.046
18	0 02.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 01.926	1 11.756	18	.049
19	0 03.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 02.090	1 11.920	19	.052
20	0 03.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 02.254	1 12.083	20	.055
21	0 03.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 02.418	1 12.247	21	.057
22	0 03.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 02.582	1 12.411	22	.060
23	0 03.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 02.745	1 12.575	23	.063
24	0 03.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 02.909	1 12.739	24	.066
25	0 04.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 03.073	1 12.903	25	.068
26	0 04.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 03.237	1 13.066	26	.071
27	0 04.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 03.401	1 13.230	27	.074
28	0 04.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 03.564	1 13.394	28	.076
29	0 04.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 03.728	1 13.558	29	.079
30	0 04.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 03.892	1 13.722	30	.082
31	0 05.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 04.056	1 13.886	31	.085
32	0 05.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 04.220	1 14.049	32	.087
33	0 05.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54 554	1 04.384	1 14.213	33	.090
34	0 05.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 04.547	1 14.377	34	.093
35	0 05.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 04.711	1 14.541	35	.096
36	0 05.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 04.875	1 14.705	36	.098
37	0 06.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 05.039	1 14.868	37	.101
38	0 06.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 05.203	1 15.032	38	.104
39	0 06.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 05.367	1 15.196	39	.106
40	0 06.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 05.530	1 15.360	40	.109
41	0 06.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 05.694	1 15.524	41	.112
42	0 06.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 05.858	1 15.688	42	.115
43	0 07.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 06.022	1 15.851	43	.117
44	0 07.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 06.186	1 16.015	44	.120
45	0 07.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 06.350	1 16.179	45	.123
46	0 07.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 06.513	1 16.343	46	.126
47	0 07.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 06.677	1 16.507	47	.128
48	0 07.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 06.841	1 16.671	48	.131
49	0 08.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 07.005	1 16.834	49	.134
50	0 08.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 07.169	1 16.998	50	.137
51	0 08.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 07.332	1 17.162	51	.139
52	0 08.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 07.496	1 17.326	52	.142
53	0 08.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 07.660	1 17.490	53	.145
54	0 08.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 07.824	1 17.654	54	.147
55	0 09.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 07.988	1 17.817	55	.150
56	0 09.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 08.152	1 17.981	56	.153
57	0 09.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 08.315	1 18.145	57	.156
58	0 09.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 08.479	1 18.309	58	.158
59	0 09.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 08.643	1 18.473	59	.161

TABLE III. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 07.784	2 17.614	2 27.443		
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 07.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 08.112	2 17.941	2 27.771	2	.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 08.276	2 18.105	2 27.935	3	.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 08.440	2 18.269	2 28.099	4	.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 08.603	2 18.433	2 28.263	5	.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 08.767	2 18.597	2 28.426	6	.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 08.931	2 18.761	2 28.590	7	.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 09.095	2 18.924	2 28.754	8	.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 09.259	2 19.088	2 28.918	9	.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 09.423	2 19.252	2 29.082	10	.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 09.586	2 19.416	2 29.245	11	.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 09.750	2 19.580	2 29.409	12	.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 00.084	2 09.914	2 19.744	2 29.573	13	.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 00.248	2 10.078	2 19.907	2 29.737	14	.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 00.412	2 10.242	2 20.071	2 29.901	15	.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 00.576	2 10.405	2 20.235	2 30.065	16	.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 00.740	2 10.569	2 20.399	2 30.228	17	.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 00.904	2 10.733	2 20.563	2 30.392	18	.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 01.067	2 10.897	2 20.727	2 30.556	19	.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 01.231	2 11.061	2 20.890	2 30.720	20	.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 01.395	2 11.225	2 21.054	2 30.884	21	.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 01.559	2 11.388	2 21.218	2 31.048	22	.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 01.723	2 11.552	2 21.382	2 31.211	23	.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 01.887	2 11.716	2 21.546	2 31.375	24	.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 02.050	2 11.880	2 21.709	2 31.539	25	.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 02.214	2 12.044	2 21.873	2 31.703	26	.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 02.378	2 12.208	2 22.037	2 31.867	27	.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 02.542	2 12.371	2 22.201	2 32.031	28	.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 02.706	2 12.535	2 22.365	2 32.194	29	.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 02.869	2 12.699	2 22.529	2 32.358	30	.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 03.033	2 12.863	2 22.692	2 32.522	31	.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 03.197	2 13.027	2 22.856	2 32.686	32	.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 03.361	2 13.191	2 23.020	2 32.850	33	.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 03.525	2 13.354	2 23.184	2 33.013	34	.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 03.689	2 13.518	2 23.348	2 33.177	35	.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 03.852	2 13.682	2 23.512	2 33.341	36	.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 04.016	2 13.846	2 23.675	2 33.505	37	.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 04.180	2 14.010	2 23.839	2 33.669	38	.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 04.344	2 14.173	2 24.003	2 33.833	39	.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 04.508	2 14.337	2 24.167	2 33.996	40	.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 04.672	2 14.501	2 24.331	2 34.160	41	.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 04.835	2 14.665	2 24.495	2 34.324	42	.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 04.999	2 14.829	2 24.658	2 34.488	43	.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 05.163	2 14.993	2 24.822	2 34.652	44	.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 05.327	2 15.156	2 24.986	2 34.816	45	.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 05.491	2 15.320	2 25.150	2 34.979	46	.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 05.655	2 15.484	2 25.314	2 35.143	47	.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 05.818	2 15.648	2 25.477	2 35.307	48	.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 05.982	2 15.812	2 25.641	2 35.471	49	.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 06.146	2 15.976	2 25.805	2 35.635	50	.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 06.310	2 16.139	2 25.969	2 35.798	51	.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 06.474	2 16.303	2 26.133	2 35.962	52	.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 06.637	2 16.467	2 26.297	2 36.126	53	.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 06.801	2 16.631	2 26.460	2 36.290	54	.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 06.965	2 16.795	2 26.624	2 36.454	55	.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 07.129	2 16.959	2 26.788	2 36.618	56	.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 07.293	2 17.122	2 26.952	2 36.781	57	.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 07.457	2 17.286	2 27.116	2 36.945	58	.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 07.620	2 17.450	2 27.280	2 37.109	59	.161

TABLE III. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal	$16^{h.}$	$17^{h.}$	$18^{h.}$	$19^{h.}$	$20^{h.}$	$21^{h.}$	$22^{h.}$	$23^{h.}$	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	2 37.273	2 47.102	2 56.932	3 06.762	3 16.591	3 26.421	3 36.250	3 46.080		
1	2 37.437	2 47.266	2 57.096	3 06.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 07.089	3 16.919	3 26.748	3 36.578	3 46.407	2	.005
3	2 37.764	2 47.594	2 57.424	3 07.253	3 17.083	3 26.912	3 36.742	3 46.571	3	.008
4	2 37.928	2 47.758	2 57.587	3 07.417	3 17.246	3 27.076	3 36.906	3 46.735	4	.011
5	2 38.092	2 47.922	2 57.751	3 07.581	3 17.410	3 27.240	3 37.069	3 46.899	5	.014
6	2 38.256	2 48.085	2 57.915	3 07.745	3 17.574	3 27.404	3 37.233	3 47.063	6	.016
7	2 38.420	2 48.249	2 58.079	3 07.908	3 17.738	3 27.568	3 37.397	3 47.227	7	.019
8	2 38.584	2 48.413	2 58.243	3 08.072	3 17.902	3 27.731	3 37.561	3 47.390	8	.022
9	2 38.747	2 48.577	2 58.406	3 08.236	3 18.066	3 27.895	3 37.725	3 47.554	9	.025
10	2 38.911	2 48.741	2 58.570	3 08.400	3 18.229	3 28.059	3 37.889	3 47.718	10	.027
11	2 39.075	2 48.905	2 58.734	3 08.564	3 18.393	3 28.223	3 38.052	3 47.882	11	.030
12	2 39.239	2 49.068	2 58.898	3 08.728	3 18.557	3 28.387	3 38.216	3 48.046	12	.033
13	2 39.403	2 49.232	2 59.062	3 08.891	3 18.721	3 28.550	3 38.380	3 48.210	13	.035
14	2 39.566	2 49.396	2 59.226	3 09.055	3 18.885	3 28.714	3 38.544	3 48.373	14	.038
15	2 39.730	2 49.560	2 59.389	3 09.219	3 19.049	3 28.878	3 38.708	3 48.537	15	.041
16	2 39.894	2 49.724	2 59.553	3 09.383	3 19.212	3 29.042	3 38.871	3 48.701	16	.044
17	2 40.058	2 49.888	2 59.717	3 09.547	3 19.376	3 29.206	3 39.035	3 48.865	17	.046
18	2 40.222	2 50.051	2 59.881	3 09.710	3 19.540	3 29.370	3 39.199	3 49.029	18	.049
19	2 40.386	2 50.215	3 00.045	3 09.874	3 19.704	3 29.533	3 39.363	3 49.193	19	.052
20	2 40.549	2 50.379	3 00.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	.055
21	2 40.713	2 50.543	3 00.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	.057
22	2 40.877	2 50.707	3 00.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	.060
23	2 41.041	2 50.870	3 00.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	.063
24	2 41.205	2 51.034	3 00.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	.066
25	2 41.369	2 51.198	3 01.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	.068
26	2 41.532	2 51.362	3 01.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	.071
27	2 41.696	2 51.526	3 01.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	.074
28	2 41.860	2 51.690	3 01.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	.076
29	2 42.024	2 51.853	3 01.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	.079
30	2 42.188	2 52.017	3 01.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	.082
31	2 42.352	2 52.181	3 02.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	.085
32	2 42.515	2 52.345	3 02.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	.087
33	2 42.679	2 52.509	3 02.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	.090
34	2 42.843	2 52.673	3 02.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	.093
35	2 43.007	2 52.836	3 02.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	.096
36	2 43.171	2 53.000	3 02.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	.098
37	2 43.334	2 53.164	3 02.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	.101
38	2 43.498	2 53.328	3 03.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	.104
39	2 43.662	2 53.492	3 03.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	.106
40	2 43.826	2 53.656	3 03.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	.109
41	2 43.990	2 53.819	3 03.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	.112
42	2 44.154	2 53.983	3 03.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	.115
43	2 44.317	2 54.147	3 03.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	.117
44	2 44.481	2 54.311	3 04.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	.120
45	2 44.645	2 54.475	3 04.304	3 14.134	3 23.963	3 33 793	3 43.622	3 53.452	45	.123
46	2 44.809	2 54.638	3 04.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	.126
47	2 44.973	2 54.802	3 04.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	.128
48	2 45.137	2 54.966	3 04.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	.131
49	2 45.300	2 55.130	3 04.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	.134
50	2 45.464	2 55.294	3 05.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	.137
51	2 45.628	2 55.458	3 05.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	.139
52	2 45.792	2 55.621	3 05.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	.142
53	2 45.956	2 55.785	3 05.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	.145
54	2 46.120	2 55.949	3 05.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	.147
55	2 46.283	2 56.113	3 05.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	.150
56	2 46.447	2 56.277	3 06.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	.153
57	2 46.611	2 56.441	3 06.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	.156
58	2 46.775	2 56.604	3 06.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	.158
59	2 46.939	2 56.768	3 06.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	.161

TABLE III. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	$0^{h.}$	$1^{h.}$	$2^{h.}$	$3^{h.}$	$4^{h.}$	$5^{h.}$	$6^{h.}$	$7^{h.}$	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	0 00.000	0 09.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 08.995		
1	0 00.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 09.160	1	0.003
2	0 00.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 09.324	2	.005
3	0 00.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 09.488	3	.008
4	0 00.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 09.652	4	.011
5	0 00.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 09.817	5	.014
6	0 00.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 00.124	1 09.981	6	.016
7	0 01.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 00.289	1 10.145	7	.019
8	0 01.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 00.453	1 10.310	8	.022
9	0 01.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 00.617	1 10.474	9	.025
10	0 01.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 00.782	1 10.638	10	.027
11	0 01.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 00.946	1 10.802	11	.030
12	0 01.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 01.110	1 10.967	12	.033
13	0 02.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 01.274	1 11.131	13	.036
14	0 02.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 01.439	1 11.295	14	.038
15	0 02.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 01.603	1 11.459	15	.041
16	0 02.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 01.767	1 11.624	16	.044
17	0 02.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 01.932	1 11.788	17	.047
18	0 02.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 02.096	1 11.952	18	.049
19	0 03.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 02.260	1 12.117	19	.052
20	0 03.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 02.424	1 12.281	20	.055
21	0 03.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 02.589	1 12.445	21	.057
22	0 03.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 02.753	1 12.609	22	.060
23	0 03.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 02.917	1 12.774	23	.063
24	0 03.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 03.081	1 12.938	24	.066
25	0 04.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 03.246	1 13.102	25	.068
26	0 04.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 03.410	1 13.266	26	.071
27	0 04.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 03.574	1 13.431	27	.074
28	0 04.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 03.739	1 13.595	28	.077
29	0 04.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 03.903	1 13.759	29	.079
30	0 04.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 04.067	1 13.924	30	.082
31	0 05.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 04.231	1 14.088	31	.085
32	0 05.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 04.396	1 14.252	32	.088
33	0 05.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 04.560	1 14.416	33	.090
34	0 05.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 04.724	1 14.581	34	.093
35	0 05.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 04.888	1 14.745	35	.096
36	0 05.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 05.053	1 14.909	36	.099
37	0 06.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 05.217	1 15.073	37	.101
38	0 06.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 05.381	1 15.238	38	.104
39	0 06.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 05.546	1 15.402	39	.107
40	0 06.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 05.710	1 15.566	40	.110
41	0 06.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 05.874	1 15.731	41	.112
42	0 06.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 06.038	1 15.895	42	.115
43	0 07.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56 346	1 06.203	1 16.059	43	.118
44	0 07.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 06.367	1 16.223	44	.120
45	0 07.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 06.531	1 16.388	45	.123
46	0 07.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 06.695	1 16.552	46	.126
47	0 07.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 06.860	1 16.716	47	.129
48	0 07.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 07.024	1 16.881	48	.131
49	0 08.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 07.188	1 17.045	49	.134
50	0 08.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 07.353	1 17.209	50	.137
51	0 08.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 07.517	1 17.373	51	.140
52	0 08.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 07.681	1 17.538	52	.142
53	0 08.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 07.845	1 17.702	53	.145
54	0 08.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 08.010	1 17.866	54	.148
55	0 09.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 08.174	1 18.030	55	.151
56	0 09.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 08.338	1 18.195	56	.153
57	0 09.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 08.502	1 18.359	57	.156
58	0 09.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 08.667	1 18.523	58	159
59	0 09.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 08.831	1 18.688	59	.162

TABLE III. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	8 h.	9 h.	10 h.	11 h.	12 h.	13 h.	14 h.	15 h.	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 08.134	2 17.991	2 27.847		
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 08.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 08.463	2 18.319	2 28.176	2	.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 08.627	2 18.483	2 28.340	3	.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 08.791	2 18.648	2 28.504	4	.011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 08.956	2 18.812	2 28.668	5	.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 09.120	2 18.976	2 28.833	6	.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 09.284	2 19.141	2 28.997	7	.019
8	1 20.166	1 30.022	1 39.879	1 49.785	1 59.592	2 09.448	2 19.305	2 29.161	8	.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 09.613	2 19.469	2 29.326	9	.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 09.777	2 19.633	2 29.490	10	.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 00.085	2 09.941	2 19.798	2 29.654	11	.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 00.249	2 10.105	2 19.962	2 29.818	12	.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 00.413	2 10.270	2 20.126	2 29.983	13	.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 00.578	2 10.434	2 20.290	2 30.147	14	.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 00.742	2 10.598	2 20.455	2 30.311	15	.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 00.906	2 10.763	2 20.619	2 30.476	16	.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 01.070	2 10.927	2 20.783	2 30.640	17	.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 01.235	2 11.091	2 20.948	2 30.804	18	.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 01.399	2 11.255	2 21.112	2 30.968	19	.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 01.563	2 11.420	2 21.276	2 31.133	20	.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 01.727	2 11.584	2 21.440	2 31.297	21	.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 01.892	2 11 748	2 21.605	2 31.461	22	.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 02.056	2 11.912	2 21.769	2 31.625	23	.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 02.220	2 12.077	2 21.933	2 31.790	24	.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 02.385	2 12.241	2 22.098	2 31.954	25	.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 02.549	2 12.405	2 22.262	2 32.118	26	.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 02.713	2 12.570	2 22.426	2 32.283	27	.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 02.877	2 12.734	2 22.590	2 32.447	28	.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 03.042	2 12.898	2 22.755	2 32.611	29	.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 03.206	2 13.062	2 22.919	2 32.775	30	.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 03.370	2 13.227	2 23.083	2 32.940	31	.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 03.534	2 13.391	2 23.247	2 33.104	32	.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 03.699	2 13.555	2 23.412	2 33.268	33	.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 03.863	2 13.720	2 23.576	2 33.432	34	.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 04.027	2 13.884	2 23.740	2 33.597	35	.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 04.192	2 14.048	2 23.905	2 33.761	36	.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 04.356	2 14.212	2 24.069	2 33.925	37	.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 04.520	2 14.377	2 24.233	2 34.090	38	.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 04.684	2 14.541	2 24.397	2 34.254	39	.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 04.849	2 14.705	2 24.562	2 34.418	40	.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 05.013	2 14.869	2 24.726	2 34.582	41	.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 05.177	2 15.034	2 24.890	2 34.747	42	.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 05.342	2 15.198	2 25.054	2 34.911	43	.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 05.506	2 15.362	2 25.219	2 35.075	44	.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 05.670	2 15.527	2 25.383	2 35.239	45	.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 05.834	2 15.691	2 25.547	2 35.404	46	.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 05.999	2 15.855	2 25.712	2 35.568	47	.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 06.163	2 16.019	2 25.876	2 35.732	48	.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 06 327	2 16.184	2 26.040	2 35.897	49	.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 06.491	2 16.348	2 26.204	2 36.061	50	.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 06.656	2 16.512	2 26.369	2 36.225	51	.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 06.820	2 16.676	2 26.533	2 36.389	52	142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 06.984	2 16.841	2 26.697	2 36.554	53	.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 07.149	2 17.005	2 26.861	2 36.718	54	.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 07.313	2 17.169	2 27.026	2 36.882	55	.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 07.477	2 17.334	2 27.190	2 37.047	56	.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 07.641	2 17.498	2 27.354	2 37.211	57	.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 07.806	2 17.662	2 27.519	2 37.375	58	.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 07.970	2 17.826	2 27.683	2 37.539	59	.162

TABLE III. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	
m.	m. s.	m. s.	m s.	m. s.	m. s.	m. s.	m. s.	m. s	s.	s.
0	2 37.704	2 47.560	2 57.417	3 07.273	3 17.129	3 26.986	3 36.842	3 46.699		
1	2 37.868	2 47.724	2 57.581	3 07.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 07.602	3 17.458	3 27.315	3 37.171	3 47.027	2	.005
3	2 38.196	2 48.053	2 57.909	3 07.766	3 17.622	3 27.479	3 37.335	3 47.192	3	.008
4	2 38.361	2 48.217	2 58.074	3 07.930	3 17.787	3 27.643	3 37.500	3 47.356	4	.011
5	2 38.525	2 48.381	2 58.238	3 08.094	3 17.951	3 27.807	3 37.664	3 47.520	5	.014
6	2 38.689	2 48.546	2 58.402	3 08.259	3 18.115	3 27.972	3 37.828	3 47.685	6	.016
7	2 38.854	2 48.710	2 58.566	3 08.423	3 18.279	3 28.136	3 37.992	3 47.849	7	.019
8	2 39.018	2 48.874	2 58.731	3 08.587	3 18.444	3 28.300	3 38.157	3 48.013	8	.022
9	2 39.182	2 49.039	2 58.895	3 08.751	3 18.608	3 28.464	3 38.321	3 48.177	9	.025
10	2 39.346	2 49.203	2 59.059	3 08.916	3 18.772	3 28.629	3 38.485	3 48.342	10	.027
11	2 39.511	2 49.367	2 59.224	3 09.080	3 18.937	3 28.793	3 38.649	3 48.506	11	.030
12	2 39.675	2 49.531	2 59.388	3 09.244	3 19.101	3 28.957	3 38.814	3 48.670	12	.033
13	2 39.839	2 49.696	2 59.552	3 09.409	3 19.265	3 29.122	3 38.978	3 48.834	13	.036
14	2 40.003	2 49.860	2 59.716	3 09.573	3 19.429	3 29.286	3 39.142	3 48.999	14	.038
15	2 40.168	2 50.024	2 59.881	3 09.737	3 19.594	3 29.450	3 39.307	3 49.163	15	.041
16	2 40.332	2 50.188	3 00.045	3 09.901	3 19.758	3 29.614	3 39.471	3 49.327	16	.044
17	2 40.496	2 50.353	3 00.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	.047
18	2 40.661	2 50.517	3 00.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	.049
19	2 40.825	2 50.681	3 00.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	.052
20	2 40.989	2 50.846	3 00.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	.055
21	2 41.153	2 51.010	3 00.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	.057
22	2 41.318	2 51.174	3 01.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	.060
23	2 41.482	2 51.338	3 01.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	.063
24	2 41.646	2 51.503	3 01.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	.066
25	2 41.810	2 51.667	3 01.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	.068
26	2 41.975	2 51.831	3 01.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	.071
27	2 42.139	2 51.995	3 01.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	.074
28	2 42.303	2 52.160	3 02.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	.077
29	2 42.468	2 52.324	3 02.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	.079
30	2 42.632	2 52.488	3 02.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	.082
31	2 42.796	2 52.653	3 02.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	.085
32	2 42.960	2 52.817	3 02.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	.088
33	2 43.125	2 52.981	3 02.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	.090
34	2 43.289	2 53.145	3 03.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	.093
35	2 43.453	2 53.310	3 03.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	.096
36	2 43.617	2 53.474	3 03.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	.099
37	2 43.782	2 53.638	3 03.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	.101
38	2 43.946	2 53.803	3 03.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	.104
39	2 44.110	2 53.967	3 03.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	.107
40	2 44.275	2 54.131	3 03.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	.110
41	2 44.439	2 54.295	3 04.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	.112
42	2 44.603	2 54.460	3 04.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	.115
43	2 44.767	2 54.624	3 04.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	.118
44	2 44.932	2 54.788	3 04.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	.120
45	2 45.096	2 54.952	3 04.809	3 14.665	3 24.522	3 34 378	3 44.235	3 54.091	45	.123
46	2 45.260	2 55.117	3 04.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	.126
47	2 45.425	2 55.281	3 05.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	.129
48	2 45.589	2 55.445	3 05.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	.131
49	2 45.753	2 55.610	3 05.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	.134
50	2 45.917	2 55.774	3 05.630	3 15.487	3 25.348	3 35.200	3 45.056	3 54.913	50	.137
51	2 46.082	2 55.938	3 05.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	.140
52	2 46.246	2 56.102	3 05.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	.142
53	2 46.410	2 56.267	3 06.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	.145
54	2 46.574	2 56.431	3 06.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	.148
55	2 46.739	2 56.595	3 06.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	.151
56	2 46.903	2 56.759	3 06.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	.153
57	2 47.067	2 56.924	3 06.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	.156
58	2 47.232	2 57.088	3 06.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56 227	58	159
59	2 47.396	2 57.252	3 07.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	.162

TABLE IV.

TABLE GIVING THE CORRECTION OF α URSÆ MINORIS AND δ URSÆ MINORIS FOR TERMS OF NUTATION INVOLVING 2 ☾.

☽ or ☽ — 180°.	α Ursæ Minoris.		δ Ursæ Minoris.		☽ or ☽ — 180°.	☽ or ☽ — 180°.	α Ursæ Minoris.		δ Ursæ Minoris.		☽ or ☽ — 180°.
	R.A.	Dec.	R.A.	Dec.			R.A.	Dec.	R.A.	Dec.	
0°	$-.229^{s}$	$+.03''$	$-.008^{s}$	$-.09''$	90°	45°	$-.075^{s}$	$-.08''$	$+.078^{s}$	$-.01''$	135°
1	.231	.02	.005	.09	91	46	.067	.08	.078	—.01	136
2	.233	.02	—.003	.09	92	47	.058	.08	.079	.00	137
3	.235	.02	.000	.09	93	48	.050	.08	.079	.00	138
4	.236	.01	+.003	.09	94	49	.042	.08	.078	.00	139
5	—.238	+.01	+.006	—.09	95	50	—.034	—.08	+.078	+.01	140
6	.239	+.01	.008	.09	96	51	.026	.08	.078	.01	141
7	.240	.00	.011	.09	97	52	.017	.08	.077	.01	142
8	.240	.00	.013	.09	98	53	—.008	.08	.077	.02	143
9	.240	.00	.016	.09	99	54	.000	.08	.077	.02	144
10	—.240	.00	+.019	—.09	100	55	+.008	—.08	+.076	+.02	145
11	.240	—.01	.021	.09	101	56	.016	.08	.075	.03	146
12	.239	.01	.024	.08	102	57	.025	.08	.074	.03	147
13	.238	.01	.026	.08	103	58	.033	.08	.073	.03	148
14	.236	.02	.029	.08	104	59	.042	.08	.072	.04	149
15	—.235	—.02	+.032	—.08	105	60	+.050	—.08	+.071	+.04	150
16	.233	.02	.034	.08	106	61	.058	.08	.070	.04	151
17	.231	.03	.037	.08	107	62	.066	.08	.069	.04	152
18	.229	.03	.039	.08	108	63	.074	.08	.067	.05	153
19	.226	.03	.042	.08	109	64	.082	.08	.066	.05	154
20	—.223	—.03	+.044	—.07	110	65	+.090	—.07	+.064	+.05	155
21	.220	.03	.046	.07	111	66	.097	.07	.062	.05	156
22	.216	.04	.048	.07	112	67	.105	.07	.061	.06	157
23	.212	.04	.050	.07	113	68	.112	.07	.060	.06	158
24	.208	.04	.052	.07	114	69	.120	.07	.058	.06	159
25	—.204	—.04	+.054	—.06	115	70	+.127	—.07	+.056	+.06	160
26	.200	.05	.055	.06	116	71	.134	.07	.054	.06	161
27	.196	.05	.057	.06	117	72	.141	.07	.052	.07	162
28	.190	.05	.059	.06	118	73	.148	.07	.050	.07	163
29	.185	.05	.061	.06	119	74	.154	.06	.048	.07	164
30	—.179	—.05	+.063	—.05	120	75	+.161	—.06	+.046	+.07	165
31	.173	.06	.064	.05	121	76	.167	.06	.045	.07	166
32	.168	.06	.065	.05	122	77	.173	.06	.043	.08	167
33	.162	.06	.067	.05	123	78	.178	.05	.040	.08	168
34	.155	.06	.068	.04	124	79	.184	.05	.037	.08	169
35	—.148	—.06	+.070	—.04	125	80	+.189	—.05	+.034	+.08	170
36	.141	.07	.071	.04	126	81	.194	.05	.031	.08	171
37	.133	.07	.072	.03	127	82	.199	.04	.029	.08	172
38	.126	.07	.073	.03	128	83	.204	.04	.026	.08	173
39	.119	.07	.074	.03	129	84	.207	.04	.024	.09	174
40	—.113	—.07	+.075	—.02	130	85	+.212	—.04	+.022	+.09	175
41	.106	.07	.076	.02	131	86	.216	.03	.020	.09	176
42	.099	.07	.077	.02	132	87	.220	.03	.017	.09	177
43	.092	.08	.077	.02	133	88	.223	.03	.013	.09	178
44	.084	.08	.078	.01	134	89	.226	.03	.011	.09	179
45	—.075	—.08	+.078	—.01	135	90	+.229	—.03	+.008	+.09	180

Note. — These corrections were omitted in the places of these Stars in the volumes of this Ephemeris for 1857, 1858, and 1859. They have been applied in this volume.

15

This book should be returned to the Library on or before the last date stamped below.

A fine of five cents a day is incurred by retaining it beyond the specified time.

Please return promptly.